BASIC PRINTMAKING TECHNIQUES

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A GUIDE FOR TEACHERS

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BASIC PRINTMAKING TECHNIQUES

A GUIDE FOR TEACHERS

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Front cover: Terence La Noue, *Tarantella Series I,* 1988. Monotype, collage, hand-colored, 55 3/4 x 76 1/4" (142 x 194 cm). Printed and published by Tyler Graphics Ltd. Copyright Terence La Noue/Tyler Graphics Ltd., 1988.

Back cover: Gregory Amenoff, *Untitled,* 1989. Woodcut, ten blocks, sixteen colors; 54 x 48" (137 x 122 cm). Courtesy Houston Fine Art Press.

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The oldest traces of creativity in prints can be found in caves in southern France, northern Spain and Australia. The human hand, used as a stencil, appears as a universal symbol of "I am here," "This is my mark." Prints have been created and collected for well over five centuries. *Basic Printmaking Techniques* and this guide offer a pathway to expand on the legacy of paper and the printed image.

Part One: Before You Begin

Designed to meet the needs of mass production, printmaking evolved from a deep yearning to share ideas, beliefs, symbols and information. Current trends in communications appear to be moving this art form toward electronic media. The forces of speed and change are propelling new knowledge to be built on older technologies at a dizzying rate. New terminology in the print field is being introduced continually.

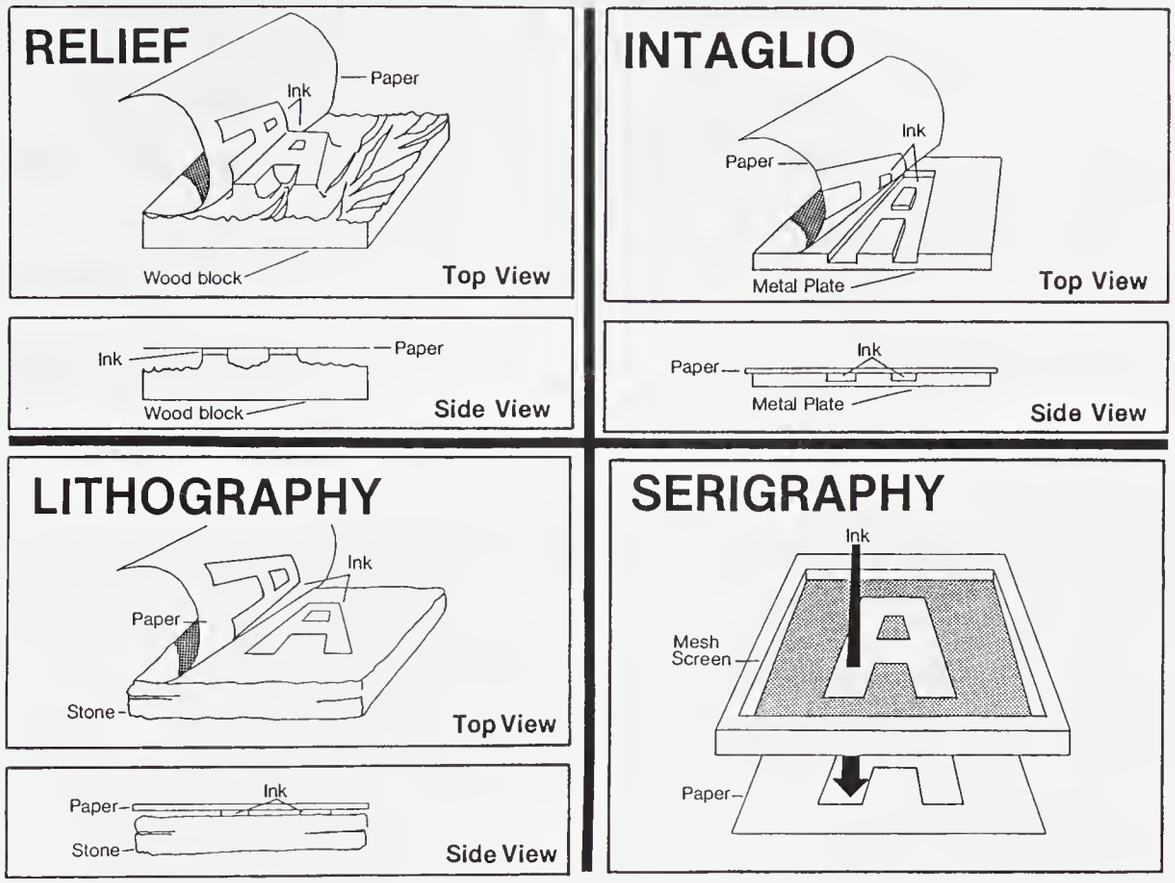
The following distinguish printmaking from other forms of artistic expression:

- A multiple image is created.
- Textures can be used in creative ways.
- Reverse images result from the process.

TYPES OF PRINTMAKING

There are four traditional divisions of printmaking, which are still currently in use. The first type of printing to evolve was the woodcut, or **relief** print. Metal-based prints, called **intaglio**, were developed next in response to the need for more rapid processes. **Lithography** and **serigraphy** have emerged in more recent times.

All printmaking processes have common ties. They each require a base material (wood, metal, stone or fiber) on which the image is developed, along with a process by which the image is transferred to another surface. Differences



between processes include amount of pressure required, production method, orientation of the image format (horizontal or vertical), composition, and the surface onto which the image is transferred.

RELIEF

Relief is a relatively simple method of printmaking. A smooth block is the base from which an image is gouged or engraved. Areas intended not to print are cut away, leaving a raised or relief image. This raised area is inked and transferred to other materials by gentle but firm pressure. Usually, large black and white areas appear rather than many fine lines.

Prints from woodblocks are called woodcuts or wood engravings. Linoleum cuts, called linocuts, are a variation of the relief method.

After the second World War, relief prints ceased to be used simply as illustrations in literary works and gained acceptance as a fine art form. Under the influence of abstraction and the continuing example of subtle printing by

the Japanese, artists exploited many surfaces, such as weathered planks. Still today, an attitude prevails in some areas that "if it can be inked, it can be printed." Some artists have even explored plaster as a printable surface. (See the student text, pages 32-35, for an unlikely base for a monoprint — clay!)

The relief printing process can create clear, direct, forceful statements. Relief prints are often noted for their expressive force and mysterious figure-ground relationships.

INTAGLIO

Intaglio (pronounced in TAHL ee oh), the second printmaking technique to be developed, is the opposite of the relief method. In intaglio, areas below the surface are the ones that print, through the use of a press which uses as much as a thousand pounds per square inch of force to push the dampened paper into the grooves of a plate. Areas on the plate's surface are wiped clean and do not print. The term intaglio is a general one referring to a variety of techniques by which the surface of a metal plate (usually copper or zinc) is altered, ink forced into the lines, the surface wiped clean, and the print made as a press pushes the paper fibers into the lines or areas to take the ink.

Intaglio encompasses a wide variety of methods including engraving with a burin, and drypointing with a sharp needle. The earliest method, metal engraving, was originated by goldsmiths, silversmiths and armorers. Later, acid was used to etch lines, reducing production time. Other intaglio methods include tonal aquatints, rolled wax soft-grounds, deep-level etching and mezzotints which produce dramatic tonal variations. Processes include aquatint, drypoint, engraving and etching. The varieties of etching include hardground and softground.

LITHOGRAPHY

In lithography, a greasy substance is used to brush or draw an image onto a planographic surface of stone or metal. After the surface is treated chemically, an application of water allows only greasy areas to accept ink. This surface ink

is then transferred to paper under pressure. Distinguishing the original design from the lithographic print can be difficult for the casual observer.

The smooth surface of the stone or plate in lithography lends itself to direct, rapid, spontaneous strokes. German writer Alois Senefelder accidentally discovered this process in 1796 while exploring methods to reproduce and print his plays.

SERIGRAPHY

Serigraphy or screen printing (also called silkscreen), the fourth major method, involves passing ink through silk or nylon mesh onto paper. Choosing from a variety of techniques, the artist creates an image on the mesh by blocking out areas that are not to be printed.

Somewhat more preparation is required to develop a serigraphy or silkscreen experience. Frames, for example, need to be acquired, along with fine cloth such as organdy or silk to stretch over them. This process makes it possible to create many layers of tint and tone for a sophisticated result. Silkscreen can also be combined easily with other print methods.

Silkscreen methods in the United States did not come into general use until well into the twentieth century, even though variations of the process were used as far back as the Middle Ages. The primary early function of silkscreen was color enhancement for black and white images. Today, silkscreen methods are used for everything from postcard to billboard size images.

VARIATIONS ON THE FOUR PROCESSES

Monotypes fall midway between drawing, painting and printing. Images are painted onto a plastic, metal or glass base plate, then transferred to paper through pressure. The term is used to refer to any print made in one version and unable to be repeated.

Linoleum, first used for printmaking in the 1920s, is made from oxidized linseed oil on a course cloth backing, such as burlap. It is used widely for its

economy, overall consistency of composition, availability and pliability. *Linocuts* work well for reduction cutting, where successive cut and printings from one block provide a rich range of colors and values.

Collagraphs, like linocuts, offer many challenges and opportunities due to material availability, economy and pliability. Many types of cardboard surfaces can be used for collagraphs and are available in our environment. When other pulpy textures are adhered to them and when they are coated with material to reduce absorbency, images of surprising power can result.

Aquatint is a process through which particles (traditionally rosin) are fixed to the surface of the plate through heat or spray, depending on the material used. The areas not to be altered are coated with a "stop-out" liquid, allowed to dry and then etched. A series of values can be bitten into the plate in successive stages, with longest-etched areas becoming the darkest. Aquatint areas can be softened on the edges with a burnisher or lightened with a burnisher and a scraper.

Drypoint is accomplished by scratching directly into metal with a sharp instrument. The result is usually a fuzzy line. Rembrandt used this method effectively in building up velvety dark tones.

In **etching**, the plate is coated with a hard ground. This is usually asphaltum, but artist Keith Howard substitutes a polymer floor liquid mixed with blue food coloring to obtain a firm coating. When the coating is dry, the ground is drawn through to allow the etching solution to eat a line into the plate. Howard's method encourages teachers to use less expensive roofing copper and a vertical tank described in his book (See Bibliography) on safer methods. The etching solution Howard suggests is ferric chloride, much safer than other etching solutions. The plate remains in the etch solution for a determined time. It is always good to do a test plate before beginning an actual work.

The **soft ground etching** process requires heat to roll the ground onto the plate with a clean brayer. Once applied, textures can be added to the sur-

face of the wax ground, with a sheet of waxed paper placed on top of the plate, then run through a press. The materials are then removed from the plate. This may need to be done over a waste basket, depending on the materials. Areas are then stopped out where texture is not required. Other areas are then etched until the desired depth of impression is reached. The plate is then cleaned, inked and a print made.

Surface printing is a process in which there are no raised or lowered surfaces. The principle involved is that part of the surface will take the ink and part of the plate will repel the ink. The basic surface-type printing is called lithography and utilizes limestone or tin with a treated surface. The artist draws directly on the surface with a greasy crayon or liquid to attain the desired effect. The surface is then treated to enhance the clarity of the image.

Another surface approach is **viscosity monoprinting**, in which an oilier ink is rolled onto a plastic surface, then areas are removed by wiping, dragging or drawing. The next roll, applied directly over the surface of the previous ink, is a drier, less oily ink. The third roll is even drier. The first oily color rejects the drier, succeeding inks. Students can achieve striking results by starting with magenta, followed by cyan (blue-green) and yellow.

ORIGINS OF PRINTMAKING

If you are asked why and when printmaking came into existence, you might suggest that it came about to make graphic images available to a wider audience, because of the lower cost of prints compared with original paintings. Some 20,000 years ago, the human urge to print and inscribe manifested itself. 2000 years

ago, in AD 105, Chinese craftsman Ts Ai Lun collected scraps of silk to recycle and in doing so, invented paper. Twelve centuries later, paper reached Europe, followed by two centuries of gradually building paper mills, until by the fourteenth century, paper was widely available. By 1657, paper was also available in England, and in 1690 in America. Doesn't it seem strange that we have had domestic paper available for only three hundred years, while the first sheet was made in the year AD 105? Some ideas take a long time to flourish! The Chinese are also given credit for a 900-year headstart in woodcuts. The earliest printed page dates to AD 686, yet it wasn't until the fifteenth centry in Europe that woodcuts emerged in the West.

The start of global exploration also helped develop the need for paper. Think of Columbus traveling abroad, needing enough paper to write his journals and records, for example. Today, the availability of paper and reproduction techniques is the foundation of our entire technological society.

SETTING UP A COURSE IN PRINTMAKING

Many teachers feel their experiences in printmaking have not been as strong as those in other areas. If this is the case for you, you may not yet know the thrill of pulling an original printed image. The student text focuses on three key techniques: relief methods, monotype and silkscreen. Basic relief methods include linoleum (chapter 3), cardboard (chapter 4), woodblocks (chapter 5) and collographs (chapter 6). These methods are presented in an increasing order of complexity. Chapter 7 covers the subject of silkscreening, while chapter 9 gives a background for papers and papermaking. Practical

INFLUENTIAL ARTISTS/ PRINTMAKERS

15th Century
Sandro Botticelli
Guilo Campagnola
Johann Gutenberg
Filippo Lippi
Guilio Mantegna
Antonio Pollaiuolo
Martin Schongauer

16th Century
Albrecht Altdorfer
Peter Brueghel
Ugo da Carpi
Lucas Cranach
Albrecht Dürer
Hans Baldung Grien
Hans Holbein the Younger
Lucas van Leyden
Andrea Mantegna
Marcantonio Raimondi

17th Century
Abraham Bosse
Jacques Callot
Anthony van Dyck
Claude Lorraine
Robert Nanteuil
Girolamo Parmigiano
Rembrandt van Rijn
Jacob Van Ruisdael

18th Century
Thomas Bewick
William Blake
Antonio Canale Canaletto

concerns are covered throughout the text; in particular, chapter 8 provides a guide for setting up a printmaking studio.

The end of the student text contains a glossary, list of suppliers, bibliography and index. Both you and your students will find guidelines in the text easy to follow, with photographs of artists' work, print studios, various levels of development and process stages. As in all visual arts, the teacher of printmaking who first spends adequate time for personal discovery and experimentation prior to presentation to the students will be able to handle most unexpected situations.

Jean Honore Fragonard
Francisco Goya
Giovanni Battista Piranesi
Thomas Rowlandson
Giovanni Domenico Tiepolo

19th Century
Mary Cassatt
Paul Cézanne
John Constable
Jean-Baptiste-Camille Corot
Honoré Daumier
Eugène Delacroix
Paul Gauguin
Théodore Géricault
Francois Millet
Camille Pissarro
Odilon Redon
Joseph M. W. Turner
James Abbott McNiell Whistler

20th Century
Ernst Barlach
Leonard Baskin
Max Beckmann
Richard Bosman
Helen Frankenthaler
Stanley William Hayter
Karen Kunc
Mauricio Lasansky
Edvard Munch
Gabor Peterdi
Pablo Picasso
Rudi Pozzatti
Clare Romano
Karl Schrag
John Soal

This teacher's guide is divided into three areas. Part One prepares you to teach printmaking by helping you set up your course, choose tools and materials, assess results and the like. Part Two offers additional practical advice, such as sample lessons for beginning and advanced students, background for each of the methods covered and related materials. Part Three provides alternative printmaking methods not covered in the text as well as a bibliography of books and articles that will expand your knowledge of printmaking history and techniques.

COURSE GOALS

A semester course could explore at least four types of printmaking processes. *Basic Printmaking Techniques* covers monotypes, linocuts, cardboard relief prints, woodblocks, collagraphs, silkscreens and papermaking. Some school systems are set up to accommodate lithography or intaglio approaches (drypoint, etching and engraving). Intaglio and lithography require a press while many of the print forms described in the text can be accomplished with either no press or one that is in the lower cost range.

As a teacher of printmaking, you should strive to:

◆ provide visual examples of compositional principles and elements of design.

◆ challenge students' abilities, raising their creative potential to the highest possible level.

◆ encourage a personal approach and interpretation in each of the major processes explored.

◆ help students form value judgments about their own work and the prints of others.

◆ provide opportunities to use a wide variety of materials, tools and techniques while developing high interest and respect for their use.

◆ provide a foundation of knowledge for use now and later, in more specialized study.

TEACHER RESPONSIBILITIES

Keeping in mind a checklist of tips and responsibilities can help you develop and sustain a strong print program.

◆ Arrange your class into small, workable groups. These could be formed according to students' interests, abilities or topics. This approach is parallel to the trend in many middle schools of developing "houses" within the school's structure.

◆ Emphasize respect for tools, supplies and one another's needs. Help students develop a "force field" of concentration around themselves, allowing them to have a more concentrated, intense experience rather than chatting with one another while working. For inspiration, have a collection of prints—originals, museum reproductions, books, illustrations. These can be filed according to broad subjects, and can be helpful in all other areas of teaching. Some teachers refer to this pictorial reference as a "morgue."

◆ Keep an orderly environment. Arrange tools and supplies for convenient access. For example, glass with polished edges, brayers and inks could be located in the same general area. This also helps when it comes time to take inventory each year prior to ordering supplies.

◆ Protect clothing and classroom surfaces. Have shop aprons and disposable gloves available and insist they be used. Keep newspapers in a handy place for spreading over long tables. Oilcloth can also be used as a covering.

◆ Make a portfolio for each student, keeping a record of prints made, for effective assessment at the end of the quarter or semester. Encourage an experimental attitude—a "what if" mind-set. Have students evaluate a selection of prints based on the process, the results or both. Encourage them to discuss unexpected positive and negative results in their prints.

◆ Demonstrate transfer, printing and cleanup processes, safety precautions, sharpening techniques and drying, storing and matting procedures. Monitor and reinforce all safety procedures during such tasks as sharpening, cutting, the reversal process and cleanup.

◆ Prepare the entire creative process from original idea to final execution with great care and attention to details. Provide adequate drying and storage areas. Insist that dried prints be collected by each individual and placed in personal portfolios in sequential order after margins have been cut evenly and prints have been signed and dated on their bottom borders with graphite pencil. Titles are optional, but helpful. Traditionally, the following information runs across the bottom of the image: the title on the left, the number of the edition in the middle and the signature of the artist on the right.

◆ Provide opportunities for experimenting with combinations of processes, such as silkscreen over woodcut, block print over monoprint, collagraph over linocut, embossment over stencil. Structure the curriculum from less to more difficult. (Cutting linoleum and wood is obviously for more experienced levels.)

◆ Time the class periods to allow for proper cleanup and evaluation. The

teacher should not be forced to clean up after the students, or a pattern of chaos will set in. Cleanup is an integral part of the printmaking experience. This means rollers, glass, palette knives—all materials must be cleaned up before students wash their hands. Be sure all personal belongings, books and other supplies are kept away from work areas to avoid spills and stains.

◆ Present works of both historic and contemporary artists. A demonstration by a local printmaker can be a riveting motivator. If a local print shop is available for visiting, arrange a field trip for your class or individuals. A videotape might be made for future reference.

◆ Use the correct pronunciations of printmaking terminology. The glossary in the student text is a resource for unfamiliar words. An example of an often mispronounced term is intaglio, a printing process characterized by fine lines and tones. It should be pronounced "in TAHL ee oh".

◆ Require student editions of ten prints minimum. This can allow for an exchange of prints among students, the beginning of your own personal print collection and a teaching collection for the school.

◆ Use soft rubber brayers to demonstrate inking such materials as crumpled paper, crushed metal, plastic and cardboard for printing. This can be a simple, short demonstration

◆ Make a checklist of the tools and materials you will need. Order them well in advance.

◆ Gather as many quality photographs as possible of all subjects, arranging them in files by subject. Categories could include the animal world, birds, butterflies, cities, explorations, figures, portraits and still lifes, as well as historic and contemporary artists. It might also be useful to keep files of multicultural and Oriental artists, whose works have often been completed anonymously.

GENERATING IDEAS FOR PRINTS

Discuss with the class how most prints have not only obvious, visible compositions, but also subtle themes. This broad range of themes includes natural themes, people, landscapes, still lifes, insects, geometric compositions, interiors, buildings/cities, recreation/sports, cherished objects, symbols.

Working with visual components for their own sake can be a solid starting point toward nonobjective investigations. Try having students select three of the following to explore with a viewfinder: line, shape, value, color, texture, balance, unity, movement, rhythm, pattern, repetition, emphasis/focal point, hierarchy, contrast, transition, scale, proportion, space.

Also worth exploring are overlapping forms, reversed order, hybrid shapes, open spaces, figure/ground, multiple motifs.

PROCEDURAL TIPS

To help students learn about composition, suggest that they fill the spaces of their works with a variety of shapes, patterns and lines. Have them stand while inking the plate to provide the necessary pressure. Roll up, down and across to spread ink evenly. Have an inking station so that the blocks or plates are carried from the cutting area to the inking area. This avoids problems with ink being contaminated with particles cut from the plate or block. Set up rotating teams for cleanup so that all students have an equal share in the maintenance of the classroom.

Demonstrate how to make a template to align the plate or block with the slightly dampened paper. Show the amount of pressure needed with the palm of the hand, beginning in the center, and smoothing to the edges.

Remind students that things print backwards, except in silkscreening.

By all means, discourage rushing. Have students complete preliminary drawings the same size as their final format, emphasizing bold, simple objects. Provide scrap cardboard to use when cutting through material to protect desk surfaces. Encourage questions along the way. Allow ample time for discussion of the results and quality of the experience.

Working in small groups or individually, students will learn a tremendous amount from the feedback they give each other. Exhibiting work from previous printmaking assignments provides incentive for students to try a wider gamut of possibilities.

STUDENT CRITIQUE

At the end of a printmaking unit, structure a series of questions, beginning with an objective question such as, "What objects do you see in the various works?" Continue with more subjective questions, such as, "How would you describe the visual composition? What meaning is the artist trying to convey? How could this work help people see things in a new way?"

As questions are being asked, point out strengths and have students offer suggestions. Try to refrain from offering your own point of view unless the students request it—and then perhaps an open-ended approach will generate a healthier response following the evaluation. You might also point out the importance of striving for a professional appearance via matting and signing as well as recording information on colors of ink used, reactions people have to the work and the artist's own reflections on the experience. Keeping individual journals is highly recommended for all students, along with portfolios of their semester or quarter production.

Keep in mind the possibilities of displaying prints and of developing a student collection. Some classes may decide to swap prints among themselves at the end of the course.

COMPOSITIONAL PITFALLS

In many life activities, unhelpful habits can be formed. Unknowingly, these are repeated over and over until our attention is called to them. In composing works of art, years of visual habit-forming may be difficult to alter. Here are some frequent traits considered pitfalls that you might discuss with students when talking about their work:

Technical Problems

- monotony in outlining
- overload of detail
- lack of contrast in values
- weak, unconvincing volumes
- using easiest solutions
- conflicting perspectives
- random shifts between 2nd and 3rd dimensions

Organizational Problems

- over generalization
- redundancy
- labored look
- uneven workmanship, random placement of figures
- imbalance in formal elements, principles or movements
- random lines or tones, slick look
- divided compositions

There are many possible remedies for the defects mentioned above. Here are some of the keys to more effective compositions:

- Spend enough time to see visual relationships.
- Build subtle visual variations and surprises to hold and entertain the eye.
- Employ space effects with animated, lively lines and shapes.
- Sort out what is important from what may be superfluous in the composition. Avoid unnecessary lines or tones.

◆ Build students' courage to edit visually through increased awareness.

◆ Step back to see the composition as a whole. Turn it upside down, look at a reverse image in a mirror, squint. Does the work have effective visual divisions or groupings of forms? Are there conflicts in perspective—a shifting between the appearance of two and three dimensions?

◆ Spend enough time in seeing and developing visual relationships to make the appearance of volumes convincing.

◆ Work out the value patterns before adding color.

◆ Ask yourself where more contrast would help.

◆ Take risks. Bypass the urge to reach safe, easy solutions. Investigate nature with a new eye.

◆ Use contour drawings to assist in clarifying the relationships among objects.

◆ Keep a journal of your development. Work each day!

On pages 17-18 and 19 you will find two forms. The first is an example of a general skills assessment for relief printmaking. The second is a self-assessment inventory in which students rate their abilities at several points during the year. Both forms can serve as examples for you to use, and may be photocopied or customized according to your needs.

Assessment of Learning Outcomes: Relief/Woodcut Printmaking

Name_____ Date_____

Course_____

Check the appropriate line for each of the factors listed below. Students enrolled in advanced classes should be expected to achieve higher mastery than beginning students.

1. Cleanup procedures

_____ responsive to helping keep an orderly environment

2. Composition/design development

_____ well crafted expressive imagery _____ whole view (vs. piecemeal)

_____ ability to achieve unity within a diverse range of cuts

3. Direct methods for linoleum/wood

_____ use of gouges

4. Effective methods/procedures (Check any area needing more context.)

_____ sensitivity to the material being used

5. Final Procedures

_____ turn in three prints for the class collection

_____ cleanup of studio/lockers _____ critique of total portfolio

6. Historic framework

_____ traditional/historic _____ contemporary/experimental forms

_____ career opportunities

7. Inking procedure/color mixing

_____ split roll

8. Idea generation

_____ flexibility _____ aesthetics

_____ depth of concepts _____ image transfer

9. Idea generation

_____ collagraph _____ monoprint

_____ embossment _____ combined

10. Paper procedure

_____ selection _____ soaking

_____ blotting _____ aligning _____ drying

11. Block/plate preparation

_____ sanding _____ tempera application

_____ charcoal drawing _____ pen and ink _____shellac coat

12. Portfolio maintenance/presentation

_____ recording each print inside _____ signing each print/numbering

_____ cutting mats, framing, exhibiting

13. Press operation/printing procedure

_____ hand methods _____ press adjustment

_____ blankets _____ newsprint

_____ template _____ precautions

14. Safety/health precautions

_____ understands hazards _____uses protection as outlined

15. Solvents procedures

_____ alcohol _____ kerosene

16. Text coverage/research

_____ keeps up with referencing selected areas

_____ spends time browsing in library

17. Tool use and care

_____ understands risk factors _____ proper use

18. Use of time

_____ consistency out of class

_____ respect for studio dynamics

19. Varieties of papers

_____ has examined samples

_____ has explored in art stores

_____ understands structure of paper (face/backside, weight, etc.)

Periodic Self Assessment Inventory

Name _____

Class _____

Assess yourself at three intervals: after the first third of the course, after the second third and at the end of the course. This inventory will help you understand what areas need more work and which abilities or strengths you have already established.

Consider each of the statements below. Rate yourself honestly, on a scale of 1 (low) to 10 (high). At the end of the year, look back over these self evaluations. Where have you improved? Where do you still need practice?

	Dates		
1. Visualizes relationships and qualities between objects, events, challenges			
a. Relates one concept, subject, or symbol to another, seeing relationships between the visual arts and the environment			
b. Approaches assignments with personal and critical thinking			
2. Generates imaginative ideas			
a. Amplifies and extends concepts			
b. Tries new approaches with persistence (takes risks) instead of limiting work to use of symbols or subjects that have been tried previously			
3. Develops asymmetrical compositions with creative arrangements of forms			
a. Variety and emphasis are introduced into compositions			
b. Handles art tools and media with understanding and care			
c. Balance and unity are fused within compositions			
4. Works independently, without constant monitoring of work			
a. Constructive suggestions are built into work			
b. Approaches new ideas with flexibility, changing procedures as suggested			
c. Knows cleanup procedures and follows them			

PLANNING A FUTURE IN PRINTMAKING

For students beginning to focus on career possibilities, the printmaking enterprise can offer many choices. In graphic design or visual communications, openings exist in towns and cities around the world. Areas calling for people with experience in printmaking include art centers, museums and historical centers, government and public agencies, multimedia, television, film, newspapers, magazines (both commercial and industrial) and educational institutions.

Possibilities include a broad range—such as a self-employed printmaker who chooses to work by commission on a free-lance basis, or generates a series of prints from a studio. Consultation roles are available in larger corporations with print collections, while galleries and museums often need both consultants and administrators. Cooperative print studios are emerging across the country. Specialists are involved in book design, typographic design, illustration, or in running editions with a master printer in large workshops. Publications such as the *Journal of the Print World* keep the public informed of developments in printmaking on a global basis.

In the educational arena, artist-in-residence positions are available through State Arts Councils. Teacher-printmakers are located in most colleges and universities. Art education careers include printmaking as a major component of training. Inviting a career placement official into the art classroom may be of great help to students.

WHY TEACH PRINTMAKING?

You may need to convince your administrators or board of education to either put in place or increase the role of printmaking in the school system. This may require a heavy-duty quality press and additional materials. Make the point that every public school art

BASIC PRINTMAKING SUPPLIES

adhesives (white glue)
aluminum foil
blotters
brayers, rubber, soft
cardboard-squares, corrugated
cottonswabs
files
found materials (sticks, combs, rags, feathers, etc.)
frames, silkscreen (See p. 102 in student text.)
gloves, protective
gouges, linoleum, wood
inks
  water base (or oil base)
  5 oz tubes of yellow, magenta, cyan, white, India ink
knives, ink, palette; matcutting

program needs to provide some degree of experimentation in basic printmaking. A list of strong supporting reasons will help.

Printmaking:

◆ allows sequential, critical thinking to develop with intermediate materials leading to a final image.

◆ is a budget-friendly process that can be done well on the tightest of budgets.

◆ is an excellent way to tie the present to the past, showing examples of historic artist-printmakers, as well as examples that we encounter today in our patterns of living, such as in advertising, books, illustrations and magazines.

◆ emphasizes the creative process.

◆ demonstrates impact through simplification, contrast and abstraction, as opposed to overuse of details and shading frequently associated with drawing and painting.

◆ can aid in the loss of self-consciousness about the quality of the overall final product. It can reduce internal stress, build confidence in skills such as gouging, rolling and transferring images.

◆ involves many techniques and varieties. It is a medium in its own right, with much diversity that can help make connections to other studio areas, such as applied design.

◆ is a source of fascination and challenge from preschool through adulthood.

◆ is within the capabilities and resources of most students.

◆ can use unorthodox materials, such as cardboard, collage and clay.

linoleum (or substitute mentioned in guide)
paper, stencil or waterproof, contact
paper, drawing
paper, print 22" x 30"
pencils, drawing, graphite
plastic plates
sandpaper
scissors (or X-acto knife)
shellac, fixative and alcohol for solvent
slab, ink (gloss, double strength, polished edges)
stick charcoal
tempera paint, light gray, with foam brush
water trays
wood, clear white pine
woven cloth

PLANNING A STUDIO

The diagram on page 120 of the student text offers an overview of a workable, multiuse print studio. The word ergonomic has been applied mostly to the automotive

industry, but it could also apply to a well-designed print studio in terms of setting up a space for ease of movement, cleanliness, storage access, cutting area and processing of the printed image. Here are the basic needs:

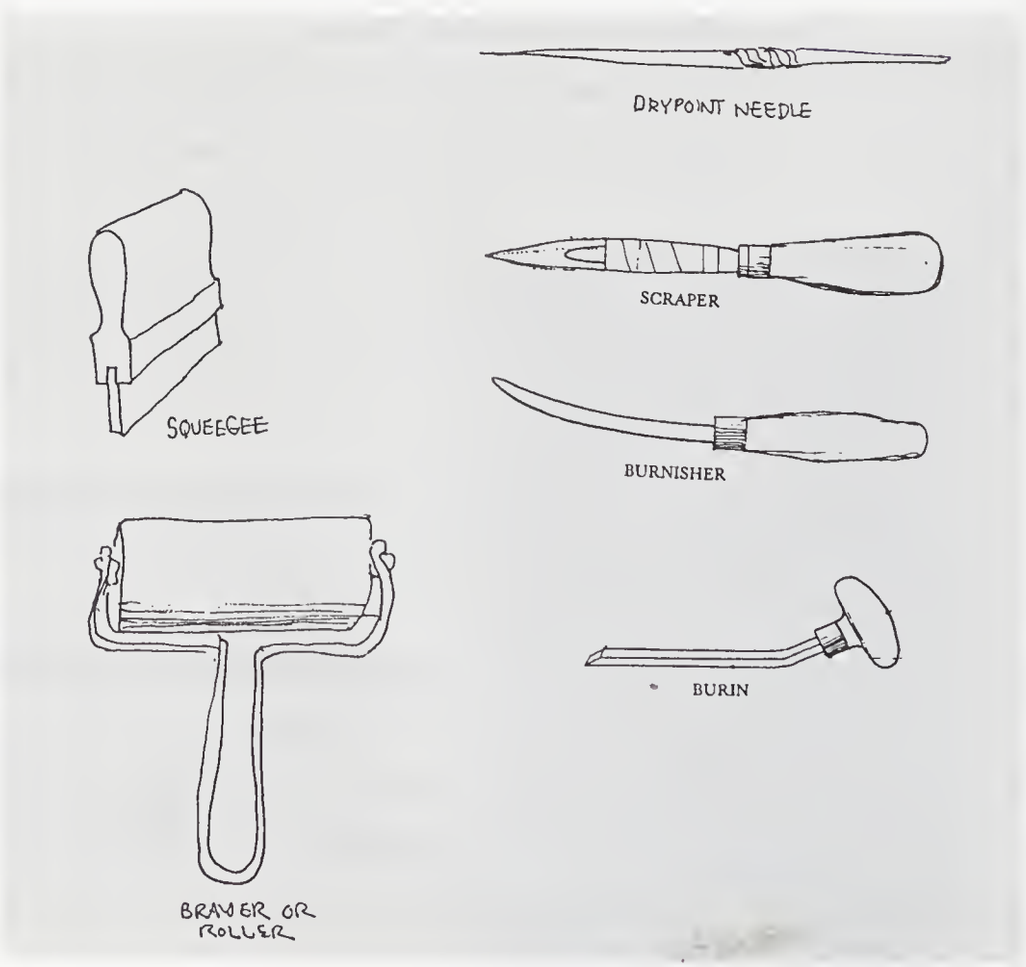
◆ A *drying rack* to hold wet prints until they dry.

◆ *Good lighting*. If lights are fluorescent, have daylight-balanced ones installed. They can make a great difference when you use color inks. If you have a choice, always try for north natural lighting.

◆ *Good ventilation*. What you think is adequate usually turns out not to be. Both general and local systems are needed. Strong exhaust fans can make a major contribution to the well-being of your students. School districts need to be sure ventilation contractors are knowledgeable and reliable. The contractors should be familiar with the book on ventilation by Clark, Cutter and McGrane. (See student text Bibliography.) Opening windows can obviously help in reducing any fumes in the area.

◆ *Sink with trap*. Adequate space around the sink is needed for cleanup of hands and dampening paper. Check with your custodians about disposal of liquid waste. Each school district has a set policy for waste disposal. Stress to students that the sink is not to be used for anything other than soap and water.

◆ Strong, durable, *heavy tables* with functional stools or chairs. If you have a table press, be sure the table is strong



enough to bear the weight of the press. Another table could be used for a paper cutter with safety bar. Remind students to not cut directly with knives on table surfaces. Always keep a protective layer between the blade and the table. If designed well, the space below the tables could be used for storage.

◆ *Storage areas* for clean paper and finished prints.

◆ *Storage* for inks, tools and solvents. Solvents should be kept in a separate, specially designed storage unit. Check safety catalogs for appropriate ones for your room.

◆ *Viewing walls* or *leaves*. These can not only assist in getting a long look at the ongoing works, but can allow for a display of prints collected over the years to show students examples of what can be created.

BASIC PRINTMAKING TOOLS

Printmaking tools are varied—and seemingly unlimited if one looks through a catalog from a large supply house. Some tools can be improvised to suit individual needs, such as electric engravers, sewing needles, nails, steel combs, dental tools and razor blades. Their use results in a variety of lines and textures. Professional printmakers sometimes use diamond-pointed tools to inscribe metal surfaces. Typical tools include:

etching needles—used to scratch through the thin layer of ground on top of a plate. A variety of textures and line types can be made with a needle.

burin—a diamond-shaped tool bent at an angle. Burins are used in engraving and come in various sizes. They are used either on metal or end-grain wood, a harder wood suitable for a wood engraving.

scraper—A three-sided, pointed steel tool with three sharp cutting edges attached to a handle. The tool is used to scrape out any unwanted texture of a line, to blunt hard edges or to create interesting soft effects. Taping the edges protects fingers from the cutting edges.

burnisher—A highly polished curved steel tool used to burnish areas on a plate that have been scraped or slightly scratched. This tool is also used to remove unwanted texture from an aquatint or drypoint. The hard surface of the steel on a softer metal such as copper or zinc polishes the plate so the rubbed area won't hold the ink. A drop of oil helps in the burnishing process.

files—Used to bevel the edges of the plate if a press is used. Unbeveled plates can easily damage printing blankets as well as cut through the print paper. The edges of the plate are beveled at forty-five-degree angles.

SAFETY TIPS AND HEALTH CONCERNS

Preparing the classroom for learning and for safety is a central responsibility of the teacher. Set up ground rules on the first day of class: no eating, drinking or smoking will be tolerated. Rubber gloves must be worn when solvents and inks are used. Hands must be clean before leaving the studio. Always have materials available for handling spills, as well as cleanup supplies for each student: soap, water, towels, nontoxic solvents, waste containers.

Tools provided to students must be selected, maintained and secured with sound judgment. Breaking a class into smaller groups can be helpful in responding to individual situations as they arise. A student should not handle a sharp tool unless the instructor has confidence that the motor skills and thought processes of the student are at an appropriate level.

Water-base inks are more easily used and cleaned than oil-base inks. Older students may be able to use oil-base materials, which dry at a slower pace and offer a longer working time.

Each passing year brings new revelations of toxicity in many products widely used in our society. A good motto for an art teacher is "When in doubt, leave it out." Do not use acids, rubber cement (naptha base), strong thinners such as lacquer, or photo-resist materials unless you have complete familiarity and control over their use.

Aerosol sprays should be generally avoided. Tests have shown particles can remain airborne for extended periods of time. The Consumer Product Safety Commission reports that over 5,000 injuries requiring emergency room treatment occur in the United States every year from aerosol sprays.

This checklist can help you deal specifically with problems surrounding hazards in materials:

◆ One major deficiency in many artrooms is adequate ventilation. If you have any doubts about air flow in your classroom, avoid toxic materials such as turpentine, mineral spirits, kerosene, lacquer thinner and other solvents.

◆ Use safe materials and processes whenever possible. Examples are the use of water-soluble glues in silkscreen, liquid wax resists, rubber latex resists and paper stencils.

◆ Order only those materials approved for each age group. Check labels for ingredients, and note all safety sheet data.

◆ Accept no donated materials until they are thoroughly checked for toxicity.

◆ Determine which students may have allergies, asthma, skin irritations or other physical or psychological limitations, or who may be taking medication. There are wide individual differences in the effect materials may have on people. Even acrylic-base materials can have small amounts of ammonia and formaldehyde, which some students could react to.

◆ Make sure any open cuts or sores are covered. School districts are becoming increasingly concerned with the safety aspects of art programs. People with expertise in health and safety are much sought after by schools wanting to "do things right" when a building is retrofitted or when new facilities are built.

Pioneer teachers have investigated new ways of working in the visual arts, some specifically in printmaking. Keith

Howard has written a brief but comprehensive book *Safe Photo Etching for Photographers and Artists*, including a complete guide to making etchings in a safer way, ten innovative hand-etching techniques, and a gelatine-based photo etching process. His book is available through Wynne Resources: P.O. Box 3500, Peace River, AB TBS IV9, Canada. Monona Rossol (see Safety Bibliography) offers a consulting service for the educational community.

SAFETY BIBLIOGRAPHY

PERIODICALS

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Best's Safety Directory, A. M. Best Company. Sources of safety equipment and supplies, published yearly. Two volumes, Ambest Road, Oldwick, NJ 08858. Telephone: 201-439-2200.

BOOKS AND PAMPHLETS

American conference of Governmental Industrial Hygienists, *Threshold Limit Values and Biological Exposure Indices* and *Industrial Ventilation: A Manual of Recommended Practice*. Publications are updated yearly. 6500 Glenway Ave., Bldg. D-7, Cincinnati, OH 45211-4438. Telephone: 513-661-7881.

American National Standards Institute (ANSI), standards for performance of safety and protective equipment. For Example, ANSI Z358.1-1981 for eye-wash fountains and emergency showers or ANSI Z87.1-1989 for face and eye protection. Available from ANSI, 1430 Broadway, New York, NY 10018. Telephone: 212-642-4900.

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Spandorfer, Curtiss, MD, and J. Snyder, MD, *Making Art Safely: Alternative Methods & Materials in Drawing, Painting, Printmaking, Graphic Design, and Photography*, Available from Van Nostrand Reinhold, 115 Fifth Avenue, New York, NY 10003. Telephone: 212-254-3232. 1993.

U.S. Public Interest Research Group, *The Picture Looks Brighter: Improvements in Artroom Safety in Washington, D.C. Area Public Schools*, Washington, DC: USPIRG, 1987.

U.S. GOVERNMENT PUBLICATIONS

Different codes of federal regulations (CFR) apply to different types of workers. The two most often applicable to schools are 29 CFR 1900-1910, also called the *General Industry Standards*, and 29 CFR 1926, the *Construction Standard*s. Call your local OSHA office for information on obtaining copies.

MATERIAL SAFETY DATA SHEETS

Some manufacturers provide Material Safety Data Sheets (MSDS) for some or all of their products. The MSDS provides important safety information, such as a listing of all standardized ingredients and warnings regarding potential fire, chemical and personal injury hazards.

You should request a MSDS for any art material whose uses or characteristics are unfamiliar to you, any unlabeled material or any material whose label does not provide warning information.

Part Two: Using the Text

This section corresponds to the student text, introducing the medium in each chapter, offering motivational teaching strategies and suggesting sample lessons for beginning and advanced students. As chapter one in the text is the introduction, we begin with chapter two.

2 *Monotypes*

Student text, pages 8-35

INTRODUCING THE MEDIUM

A monotype is created by applying ink to a plate, activating the surface and transferring the image produced onto paper by pressure, either through direct hand pressure (burnishing) or by a press. A single print is the result.

Somewhere between a print and a painting, the monotype has gained rapid acceptance over the last several decades of the twentieth century by many artists. They seem to know intuitively that the monotype process can unleash in-depth ideas and imagery. Monotypes offer a great starting place for an experience in printmaking. Students can rapidly build expertise in determining the amount of pressure required for a vivid transfer of ink and to participate in the surprises found in reversing an image. A preparatory drawing can be used below a plastic plate to serve as a guide, or a series of marks can be made without any reference. The monotype image can be applied with brush and pigment on a smooth, nonbreakable, nonabsorbent surface, such as Plexiglas™ or vinyl.

Artists Mentioned in the Text (alphabetically)

Historic—William Blake (10), Giovanni Benedetto Castiglione (10), Charles A. Walker (11)

Contemporary—Jan Arabas (19), Lois Beatty (24), Maggi Brown (23), Barbara Grad (8, 16), Lisa Houck (28), Yvonne Jacquette (25), Joel Janowitz (11, 22), Melissa Johnson (30), Mitch Lyons (32), Robert Moore (26), Janis Provisor (18), Barbara Schwartz (9, 10).

MOTIVATION

Because they can produce quick and surprising results with monotypes, students are often enthusiastic about working with the process. You can also use some of the abundant, readily available working examples of monotypes to inspire students. Monotypes can easily be made a part of every art curriculum, introduced at all levels of education. They offer a simple, "low-tech," low-cost process. The combination of compositional factors, drawing and painting results in rich, personalized statements with tones, lines and textures enhancing one another.

SAMPLE LESSON: BEGINNING

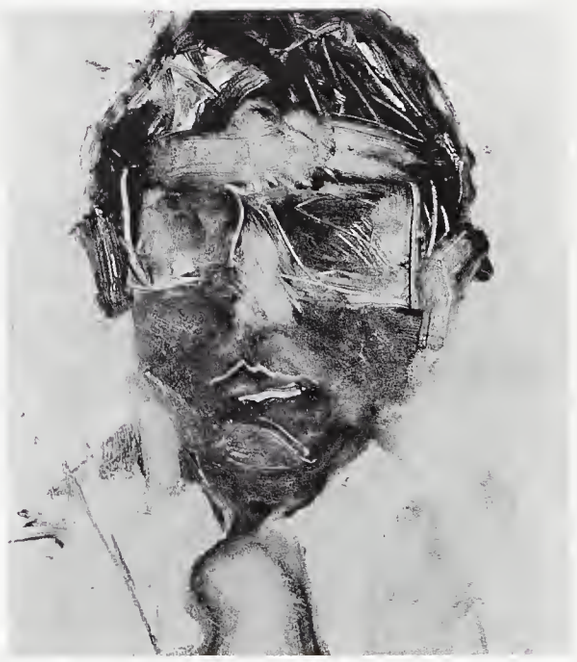
Objectives: To encourage spontaneity and rapidity as important functions in prints, striving for "one of a kind" quality. To develop confidence through a user-friendly approach to printmaking.

Materials Supplied by School:

- water-base ink or paint (5 oz. tubes of yellow, cyan, magenta, white)
- rubber ink brayers
- plastic plates, approximately 8" x 10" (20 cm x 25 cm)
- files
- cardboard squares, brushes
- cotton swabs
- blotters
- water trays
- print paper, 22"x 30" (56 cm x 76 cm)
- palette knives

Materials Students Can Collect:

- found tools and materials to make marks or impressions
- sticks
- rags
- feathers



- combs
- old toothbrushes

You can demonstrate quickly how a monoprint can be an expressive form of art. Prepare an inked plate and have each student choose one of the items from the materials list to make a mark on the plate. After each student has made a mark, press dampened paper onto the surface and apply further pressure with a rag or paper towel. Show students how to peel the paper off the plate from one side. Have them examine the outcome. Can the mark each student made be detected? How do the marks look in reverse?

Procedure: Distribute a 9" x 12" Plexiglas™ plate to each student. Have them work in small groups to facilitate the ink distribution. Each student also needs access to color ink. Magenta, cyan and yellow provide a rich, pure blending of color. After placing about an inch or less of one hue of tube ink on the plate, the ink can be rolled onto the plate. An alternate method would be a direct application of pigment on the plate, called the additive method. Instruct students to remove at least half of the pigment they just rolled on using a rag, piece of cardboard or drybrush; even fingers will work well. If a larger roller is in the area, try rolling a second color across the top with a drier ink. Brushes can be used to create a painterly effect. Try sprinkling a very small amount of water onto the surface prior to printing. To block out certain areas, cut or torn stencils may be useful. These can be made with the simplest of papers, such as newsprint or magazines.

SAMPLE LESSON: ADVANCED

Objective: To employ action figures in monotypes that create emotional and empathetic responses.

Materials: See those listed for beginning students.

Sports, dance and everyday gestures create their own nonverbal, multicultural languages. Have students bring to class a variety of pictures of people involved in such actions. Avoid stilted or posed images. After spreading out the figures, have students turn them upside down to get a new view of the overall composition. Which ones seem to naturally connect with one another? Which seem to be opposites in terms of the overall gestural feeling or quality?

Procedure: Each student should select one to three images and make a five-minute gestural drawing to capture the qualities of the pose(s). The drawings should be done on a paper the same size as the transparent Plexiglas™ plate. Place the paper below the plate where it can be attached with small rolls of tape on the nonworking side. Now use both additive (direct application of pigment) and subtractive (some rolled areas) approaches to heighten the fleeting impression of the figure. After 25 minutes, have students take an impression. With the ghost image left on the plate, take another impression, then ask another student to superimpose his or her impression, creating a double image.

Evaluation: After prints have been completed, discuss the human propensity to recall even a fleeting impression of a figure. What activities can be detected in the figures? Why should we develop our abilities to see nonverbal clues in fellow human beings? Can the multiple images remind us of artists such as Robert Rauschenberg?

Variations: Place the paper over an inked surface, then carefully draw into the back side of the paper. This picks up the ink on the plate. With some practice, stencils of torn paper can be introduced. The scraps are "floated" onto the inked surface. The print paper picks up only the areas not covered by the stencils or masks. Another variation involves the use of scrap string, burlap or other materials placed on the inked surface before taking an impression. A split color roll, such as cool to warm colors, could be helpful. Chine collé is a process of applying various papers to an inked surface with a light application of paste to the side facing up. In this way, the scraps of paper become an integral part of the print.

3 *Linoleum*

Student text, pages 36-53

INTRODUCING THE MEDIUM

Linoleum is a thickly coated floor covering made of oxidized linseed oil on a course fabric backing, resembling burlap. Although many students may have had experiences with this material, others may not. It is important, therefore, to introduce the medium carefully, asking a number of questions regarding the use of tools, the nature of negative and positive spaces and the concept of pressure.

Advantages of working with linoleum in the classroom include that it is relatively inexpensive, it has a very smooth surface, it is readily available and it is durable yet receptive to indentations. Advanced students may, with sufficient supervision, etch blocks with caustic soda to produce a relief or intaglio surface. (See pages 37 and 38 of student text.) Slight heating of the linoleum allows easier cutting and imprinting. Linoleum can also be embossed if a suitable press is available. A cheaper alternative material accessible in all communities is the back side of vinyl flooring (thicker types work best). Cutting of this material is easier and less hazardous.

Either water- or oil-base inks can be used. Oil-base inks require the use of toxic solvents in cleaning up. Teachers who want to keep classrooms as safe as possible should choose water-base inks. For centuries, Japanese printmakers have used water-base inks. Most art suppliers now have a much better grade of water-base printing ink than a decade ago.

There can be wide variations in cutting style, use of papers and ink colors, amount of ink used and pressure used in printing. With experience, stu-

dents can print on color tissue, handmade paper, magazines, telephone book pages, newspaper surfaces or marbleized paper.

Artists Mentioned in the Text (alphabetically)

Historic—Irving Amen (46), Pablo Picasso (36).

Contemporary—Chuck Close (49), Ted Dickerson (39), Michael Hurson (53), Kyohei Inukai (37), Jane Kent (42), Rob Moore (53), Dennis Revitzky (47), Michael Robbins (47), T.L. Solein (38), Steven Sorman (41).

MOTIVATION

Looking at works by Henri Matisse and Pablo Picasso can give students a sense of the type of printmaking linoleum permits. Stress the concept of flatness. Although color is exciting to use, beginning with black ink usually lessens the complexity already inherent in most print processes. Cubism would be a good style to introduce.

It is important to discuss composition. Value patterns, textural possibilities, points of emphasis and lines of force and motion need to be discussed and observed. Preliminary sketches can be most helpful if India ink and brush are used. The teacher must cover each step of the preparation of the block, the organization of the process, skill development in cutting and treatment of suitable subjects. To avoid stereotypical replication from a photo, encourage students to draw their designs directly on the block.

SAMPLE LESSON: BEGINNING

Objectives: To increase awareness of the uses of linoleum as a printing material. To introduce the brayer and gouges as new types of tools. To provide an experience that will help students relate to prints by artists who have chosen woodcuts as their primary mode of expression.

Materials:

- drawing paper
- soft graphite pencils
- linoleum gouges

- linoleum (can be mounted onto plywood or masonite for additional longevity and support)
- water-soluble block-printing ink
- ink slabs and brayers
- spoons
- soft paper for prints

Procedure: Draw a design on a 9" x 12" (23 cm x 30 cm) sheet of paper (could be as small as 4" x 5"—10 cm x 13 cm—depending on budget). The design could begin with a close look at a cross section of something organic, such as a kiwi fruit, an apple or orange. Show an example of the work of Georgia O'Keeffe, if available.

Place the design face down on top of the linoleum. Tape the paper to the linoleum to hold it in place. Rub a tablespoon vigorously across the paper so that the design transfers to the oily surface of the linoleum. (Carbon paper can also be used.)

After the design has transferred, examine the gouges. Use the V gouge for cutting lines and the U gouge to remove larger pieces. When cutting, slowly follow the lines of the design. Remind students that anything not cut away will result in a solid value or color.

Safety Note: Go slowly with the linoleum gouges. Students must take time to avoid unexpected results. Supervise students closely to make sure they always cut away from themselves. A good method is to make sure the noncutting hand is behind the other one. Too often, students suffer deep wounds in the hands because they have not been thoroughly monitored and instructed on the safest way of using the tools. Tools need to be sharpened often, as they tend to dull quickly in linoleum cutting. Always have a good safety kit nearby. (See page 40 in the student text for additional information.)

Apply about an inch of ink from the tube to the slab, rolling it out with a brayer. Lift the brayer and roll again. Spread the ink as wide and as long as the

brayer. When a crackling sound is heard, ink will be the right consistency. Roll the brayer across the linoleum surface. Make sure the ink is evenly applied over the whole surface.

Have a sheet of soft paper ready to place on top of the inked linoleum. Make sure it is centered, then press with fingers, palm of the hand and bowl of the spoon. Gently lift the paper off the linoleum, placing the print on a drying rack or other appropriate location to dry. By using slightly dampened paper, water-base inks will transfer much more effectively.

To get another impression, repeat the process of inking and placing the paper on top of the block.

SAMPLE LESSON: ADVANCED

Materials: See those listed for beginning students.

Higher quality paper can be used in this production. If the budget is tight, paper known as Dippity Dye is strong and withstands much wear and tear. Generally, softer papers are more pliable and better for this process. Ordinary newsprint can be used in the trial prints, but it deteriorates over a period of time.

Procedure: Refer to Chuck Close's seven-step reduction cut on pages 48 through 51 of the student text. Discuss the process of subtraction and reduction printing. Talk about the subject matter in most art forms (the human figure or portrait, still life, landscape, abstraction).

Allow each student to select one of these subjects, find fine art examples of it, and discover some background on artists who have worked in this medium. Follow the procedure of the previous (beginning) lesson plan to set up the image.

Discuss the procedure of going from the lightest and less intense colors to the darkest, more intense colors. Limit the ink mixtures to white, yellow, magenta and cyan. Have students select palettes to complement their compositions. The colors can be mixed in advance. No fewer than ten impressions should be tried, as there will be some unexpected results when actually taking the prints.

Draw or paint directly onto the linoleum with a pigment and binder that will hold. If the surface is too oily, try a light sanding or use steel wool to take the

oiliness away. If a marker is used, be sure it is nontoxic.

The drawing can also be transferred to the block with carbon paper and a pencil. Remind students that the design will be backwards on the block, depending on how the design is transferred. White areas will be cut away.

Make sure students work with gouges pointed away from the body, with the hand not holding the tool kept behind the other hand. This allows support and can help when "brakes" need to be applied. (See safety note under Beginning Lesson.)

Advanced students often enjoy reduction color printing. This can be applicable to either linoleum or woodcut. Advantages in this process are economy of materials, richness, use of the same format and potential for a highly interesting embossment at the end of the printing cycle. The printing cycle is as follows:

- Place the strong design on the block.
- Carve white areas and print in light color.
- Carve light areas and print in medium color.
- Carve medium areas and print in deep color.
- Carve darker colors and print in darkest color or black.
- Allow drying time between each new application of ink.
- Allow at least ten or more prints to be included, as some may have difficulty in the printing process.

It may be a good idea to keep one proof of each stage as a teaching tool to instruct others on the process. These stages offer a novel display.

ADDITIONAL NOTES

- Newspapers or butcher's wrap should be placed on the surface of the tables, inking, printing and storage areas. Good, effective cleanup facilities for hands must be in place.

◆ Aim for strong light-dark compositions, with a variety of shapes, patterns and details. Self-portraits can be a helpful starting point. Discourage tightly outlined compositions.

◆ Some artists use a grease pencil directly on the surface prior to cutting, then cut any of the gray areas away. The grease is often easily removed, exposing the block areas that will be printed. Others may want to draw on the surface with a wax crayon, felt-tip pen and brush and ink, or use white chalk on black paper to develop an idea.

◆ Demonstrate the variety of tools and how to sharpen them.

◆ Dull tools, more than any other factor, can discourage students.

◆ Demonstrate how the V shaped gouge can create sensitive lines and textures.

◆ Remind students not to cut too deeply, as ridges can add to the overall character of the finished print.

◆ Aim for cutting away approximately 50% of the total surface of the block prior to printing. Areas to be cut away can be marked with an X.

◆ Have wax crayons available to test the progress of the design over the block. Merely rub with the edge of the crayon or oil pastel, and the image should begin to appear through the fibers of the paper.

◆ A wood bench hood should be available to support the block.

◆ A heavy-duty press is something many teachers do not have access to, but those who do see the value in clarity of prints, ease and reduced printing time.

◆ Frottage is a method first tried by Max Ernst. Since it merely entails rubbing, it is a great way of determining the progress of the block. Newsprint can be used with a flat crayon. Simply lay the newsprint down on the surface of the linocut and rub with a crayon. This method can provide a visual cue as to what direction to take. Does the image seem deep enough? Do the spaces between seem to read from a distance?

4 Cardboard

Student text, pages 54-59

INTRODUCING THE MEDIUM

Cardboard provides both variety and economy to classrooms with limited resources. Students should be on the lookout for varieties of cardboard they could bring to class. Discuss the sizes, thicknesses and ways that cardboard is manufactured. Why is there so much cardboard in our society? Is it that cardboard protects products or that it helps them sell, or a combination of both? Can your students think of why Randal Thurston (page 54 of the text) has selected cardboard as a base for his prints? Note also the work of Irving Amen (page 59).

MOTIVATION

A sight-impaired person could find many subtleties of touch in the range of surfaces found in cardboard. Have students ever noticed a corrugated box, run over by hundreds of cars, yet still recognizable as a box? Can they imagine the accidental shapes turning into something of significance? Any time a person investigates something closely, aesthetic wonder tends to surface. Here is a list of ways cardboard can be treated to bring out its aesthetic qualities:

- It can be textured with nails, wire, paper clips and pebbles.
- It can be indented with a screwdriver or etching needle.
- It can be cut into and peeled back to reveal rhythmic ridges.
- It can be fit together like a jigsaw puzzle with colored interlocking parts.

◆ It can be coated with gesso or acrylic medium, allowed to dry and printed on a press as an embossment.

◆ It can be layered in an organic way to bring out the depth.

◆ It can be used as a surface to which other objects are attached (cloth, wire screening, sandpaper, crumpled paper) followed by printing as an embossment or a collagraph on a printing press.

◆ It can be used in innumerable ways. Here are some one-word suggestions that may help stimulate students: autograph, draw, mark, sign, write, adhere, bond, bind, collage, fasten, glue, join, laminate, layer, montage, tape, cut, divide, dissect, impale, nick, notch, puncture, perforate, peal, quarter, decorate, emboss, embellish, gesso, ink, ornament, paint, print, shellac, seal, sketch, wipe, roughen, shorten, shape, serrate, slice, tear.

SAMPLE LESSON: ANY LEVEL

Objective: To acquaint students with a form of printing using common materials.

Materials:

◆ corrugated cardboard

◆ scissors (or X-acto knife)

◆ tempera paint and brush (ink and roller or brayer for more advanced students)

◆ paper

Procedure: Ask students how they think a simple piece of cardboard could be used to print with. Suggest working only with straight lines and simple, geometric forms. Discuss the concept of "being under pressure" as it may apply to taking a print. What does a print offer that other art forms don't? (Replication, for a starter.)

Have each student design a simple composition using three layers of cardboard. Straight lines are easiest for beginning students. Draw the design on

a piece of corrugated cardboard. Decide where there will be a solid color, lines and open areas.

Outline each line in the design with the point of an open scissor. X-acto knives may work more effectively. If you use X-acto knives, stress safety. Press firmly so that lines are very well defined. Be sure to have protective cardboard between the table surface and the blade.

Use the first layer for the portion of the print having a solid color. This part is left as it is. For the portion that will be lined, use the corrugated part of the board. To create a colorless part of the composition, tear away both the top layer and the corrugated layer. Another method would be to simply cut through all three layers, leaving an empty or negative space below.

Be aware that the first layer of cardboard often does not come off smoothly—bits of paper are often left covering the corrugations. Scissors or fingernails can be used to remove them. This is not critical because the excess paper tends to disappear with the application of the pigment to the surface.

When the cutting is complete, moderately thin tempera paint can be used by younger students. Older students may want to use ink with a roller. For students using brushes and paint, the liquid paint should be spread over the surface with large paintbrushes. For those using a roller, the roller is charged and then rolled over the surface with some pressure. After the paint or ink is applied, paper is placed on the plate, followed by rubbing gently with the hand or a polished wooden spoon. The paper is then removed to reveal the print. Allow prints to dry.

The first print often does not turn out too well because the cardboard has not soaked up much ink or paint. After a few applications, the print should create better impressions. The first prints could be considered trial prints. If too much pressure is used when taking a print, the corrugations may be crushed. Just enough pressure should be used to transfer the pigment to the paper.

Discuss the results of cardboard printing as a class. Extend the discussion by talking about how offset colors are used in commercial printing. Describe how different plates carry different colors.

Using cardboard prints to make greeting cards of all types can generate enthusiasm among students. Setting up display boards showing the many ways students have used the three layers of cardboard in combination with colors can also promote conversation. The plates can also be displayed. With some emphasis on groups, composite prints can be made, as illustrated on pages 56 and 57 of the student text.

Variations: A variety of papers can be used. Soft papers tend to work more effectively than stiffer ones. Fabrics can be used instead of paper. Often, outdated wallpaper books from decorating shops can be acquired at no charge to provide a variety of textural surfaces. Changing color combinations while the surface is still covered with fresh pigment can offer unique color combinations. Transparent effects can be used by coating the surface first with a medium.

5 *Woodblocks*

Student text pages 60-89

INTRODUCING THE MEDIUM

Cutting a design into a simple wooden board, rolling ink onto its surface, then transferring the image onto the paper is one of the most direct and "low-tech" methods for making prints. Being one of the oldest techniques for creating multiple works of art, it has been constantly changed, revised and revived throughout history.

In America, the color woodcut came of age in the last decade of the nineteenth century. The influence came via strong interest in Japanese woodblock prints. Experimenting with Japanese methods led to a whole century of innovative approaches with this medium.

With students' sense of color and composition, this simple medium results often in subtle impressions or strong expressions of the human psyche.

Artists Mentioned in the Text (alphabetically)

Historic—Irving Amen (74, 75), Paul Gauguin (60), Joan Miró (62).

Contemporary—George Baslitz (76), James Brown (82), John Buck (69), Louisa Chase (61, 81), Chuck Close (48, 49), Francesco Clemente (81), Jim Dine (83), Susan Mackin Dolan (89), Michael Duffy (70, 71), Steve Keister (65), Emil Nolde (76), A.R. Penck (63), Nigel Rolfe (64), Frank Stella (84, 85, 86), Joan Snyder (77), James Surls (88), John Torreano (80), Terry Winters (79).

MOTIVATION

Have students examine both sides of a coin. As they do, demonstrate applying ink on a smooth palette. Roll it into a flat surface with a brayer until it is tacky. Discuss the idea that while pigment remains a constant, the medium or binder varies with each art form. Ask students what image would come through the surface of a thin paper if you were to rub across it with the coin placed underneath. This is called frottage, pioneered by artist Max Ernst. Why does the raised surface print? How easy is it to think in reverse when working? Why is it that when half of the surface is cut away it may seem just about right to take a print?

SAMPLE LESSON: BEGINNING

Objective: To increase students' sensitivity to woodcuts as a medium for printmaking, and to help them recognize the basic differences between this and other print forms.

Materials:

- blocks of clear white pine or similar surface, approximately 1" (2.5 cm) thick and 6" x 8" (15 cm x 20 cm) rectangular, with smooth grain and finish
- fine sandpaper
- block cutting tools that hold a sharp edge
- water-soluble black printing ink
- brayers
- thin yet sturdy paper
- paintbrushes
- black India ink
- charcoal sticks

Gather examples of woodcuts for students to observe by such artists as Lyonel Feininger, Erich Heckel, Ernst Ludwig Kirchner, Käthe Kollwitz, Edvard Munch and Karl Schmidt-Rottluff. You may also apply ink to the surface of a block of wood as a demonstration. Place thin paper on top of the ink, then rub

with the palm of your hand. When the paper is pulled away, a black rectangle should result. A slight pattern of grain could also emerge.

Demonstrate safe cutting technique by pushing away from the body, with the opposite hand placed securely in back of the hand used to cut the block. The noncutting hand can be used to hold the block in place.

Upon taking a second print, the class should notice that the part cut away does not print. It is the original surface of the wood that holds the image. Demonstrate also how to clean the inking palette and the brayer, and how to store the print. The surface of the block can be cleaned with moist paper towels.

Procedure: Distribute blocks of wood, paintbrushes, fast-drying ink and cutting tools. Direct students to coat the surface of the wood with the ink. Caution the class regarding the reversal of the image. Why will cutting into a black surface help visualize the final results? What kinds of expressive marks can be carved into the surface?

Distribute block cutting tools and have students cut their designs. Observe students carefully who hold the noncutting hand in front of themselves. Be sure they establish solid working habits before proceeding!

Help students use the tools to create patterns and textures by carefully guiding the gouges the same direction as the grain of the wood, and by using the flat knives across the grain. By incising lines that follow the rhythms of the grain, a significant composition could emerge. Rhythmic cuts around irregularities in the wood could also add to the overall quality of the design.

Printing the block will take a few trial proofs. Important considerations are the density of the ink, the porosity of the wood, the surface of the paper and the amount of pressure applied. By slightly dampening the paper, impressions can become more intense.

Evaluation: After the prints dry, discuss the varieties of experience that unfolded for students. Where are the most rhythmic marks? Where did the grain contribute to the composition? What would students do differently? Why would it be difficult to undo something in a woodcut as opposed to a drawing or painting? What image could be cut on the opposite side of the block?

SAMPLE LESSON: ADVANCED

Objective: To provide a rich experience in one of the oldest yet simplest of graphic art forms.

Materials:

- light gray tempera paint, diluted to form an opaque wash on the prepared wood surface
- wide foam paintbrushes
- clear white pine, birch, apple wood or similar quality material
- gouges with sharpening stone
- sandpaper
- India ink or felt-tip markers
- paintbrushes for wash, details
- charcoal sticks
- fixative
- shellac
- absorbent paper, about the weight of newsprint
- brayers
- sheets of glass with polished edges (double strength or plate glass)

Have available many textures of wood. Discuss concepts of grain, cutting, figure-ground relationships, the illusion of space. Discuss the differences between black-and-white impressions, multiple-block methods and color reduction printing approaches. Show as many examples as possible.

Procedure: Use this image to plan a design with the format of the wood in mind. A strong composition with high contrast, light and dark patterns, and good figure-ground relationships will work best. Figurative imagery, such as that found in works by Käthe Kollwitz, can be excellent subjects for an advanced woodcut.

Have each student use charcoal on paper to suggest someone who has had the greatest influence on her or him. The image could be a simplified likeness or a symbolic object associated with the person.

The image should touch at least three sides of the format. After sanding the wood to a smooth surface, apply thinned shellac as a sealer. After the surface is dry, coat the wood with a thin light gray tempera paint using a foam brush. The tempera will dry rapidly. Place the charcoal drawing face down on the gray tempera paint and rub vigorously so the image will transfer in reverse. The paper can be slightly dampened prior to printing for a richer print. At this time, spray fixative to keep the charcoal drawing intact. Then use India ink to reinforce the charcoal areas. Small detail brushes and wider painting brushes should be available. If there needs to be a make-over, the area can be covered with more gray tempera paint and rebuilt with another drawing.

Once the drawing is established on the wood it is time to work with the gouges. Remove all large areas with wider gouges. Leave detail work to the last. Carefully remove all gray areas. The only areas remaining should be black. Apply ink to the surface with a charged roller. Use soft paper to absorb the ink on the surface of the wood block.

After the prints are taken, allow drying time in a safe storage area. After they have dried, cut hinged mats and display them in an exhibit area.

Advanced students might try reduction color woodblock printing. See examples of reduction cutting in the student text, pages 48-51 (Chuck Close).

ADDITIONAL NOTES

◆ Some newer wood laminates are perhaps more suitable for woodcuts because they are less likely to warp. These are listed in most supply catalogs. Absorbent paper about the weight of newsprint tends to work best.

◆ Students should think primarily of white and black areas when planning their compositions.

◆ Encourage students to seek a balance between lines, white and black areas, and textures.

◆ As cutting occurs, note that the greater resistance of the material requires greater cutting control.

◆ A V tool can be used for the preliminary outline of the main areas of the composition.

◆ The block always needs to be steadied to avoid slippage.

◆ Students should try parallel lines, crosshatching and removing small chunks.

◆ Allow tool marks to show. For curved cuts, the block needs to be rotated.

◆ A rubbing can be taken at any point throughout the process.

◆ Blotting paper can be placed over print paper before pressing and rubbed gently with the heel of the hand, polished wooden spoon, jar covers or brayer.

◆ Textiles may be used as a substitute for paper.

6 Collagraph

Student text pages 90-97

INTRODUCING THE MEDIUM

Unless we first explore surfaces with our fingertips, it is difficult to learn about subtle differences in tactile qualities. When one thinks of collagraphs, the sense of touch comes to mind. The art form of collage also presents itself, with its similar reliance on adhered surfaces and patterns. Collagraphs can be made with found objects adhered to a base, coated with a sealer, inked and printed. Advantages include ease in finding and assembling materials, the nonhazardous nature of these materials and the flexibility of composition.

When the plate is ready to print, it is possible to ink and print only the top layers, or by use of press to print the lower levels (intaglio method). Some try to combine both methods. With experience, other forms of printmaking can be combined with collagraphs as well.

Artists involved in developing the collagraph include Glen Alps, John Ross and Clare Romano. Half the fun of working with collagraphs is the concept of recycling. Think of what Pablo Picasso, Georges Braque, Paul Klee, Kurt Schwitters and Rolf Nesch did with everyday materials. Other artists who have been involved with the development of the collagraph are Boris Margo, Edmond Casarella and Edward Stasack. As an outgrowth of collage developed early in the twentieth century, collagraphs offer highly inventive surfaces.

Artists Mentioned in the Text (alphabetically)

Contemporary—Jon Cone (96, 87), Leni Fried (90), Melissa Johnson (95), Susan Laufer (91), Archie Rand (96).

SAMPLE LESSON: BEGINNING

Objective: To understand the subtle nuances possible when ordinary materials are turned into a composition.

Materials:

- collection of fibrous materials, such as corduroy, netting, string, tapes, sand, paper, screening
- rigid material such as cardboard
- white glue
- masking tape
- scissors
- acrylic gesso or polymer medium (or aluminum foil)
- colored inks
- absorbent printing paper
- ink, brayer

Procedure: Write the word collagraph on the board. Challenge students to think of a specific environment filled with textural qualities. Ask students to assist in gathering lightweight textures for use in gluing to a cardboard format. Materials such as burlap, textured paper, foil, contact paper, string and sand all work very well. Avoid hard edges, as they can break the surface of the paper. When the collection is assembled, develop a continuum from roughest material to smoothest. This activity offers a rich tactile experience for participants. Ask if some of the textures could have expressive qualities. Can some unintended symbols be detected? What was the origin of the materials? What could they represent? What textural qualities could be found in a familiar

locale such as a fast food place in the neighborhood or a sports event? What can patterns and surfaces communicate?

Cut simple shapes from the materials, some organic, some more angled. Keep in mind the overall format. The goal should be to achieve unity, spatial effects, visual interest and a composition whose space is filled. Encourage overlapping of shapes. Experiment with torn edges rather than precise, cut edges to explore expressive possibilities. Place the materials on a rigid base, allowing both large and small open spaces across the composition, much like the "rests" needed in musical scores. Add weighted forms to the top of areas needing to be "kept in place."

Glue all materials in place, making sure all edges are fastened down. Apply thinned gesso (three parts gesso to one part water) over the surface after the glued areas are dry—students will need to wait overnight before application of the gesso. This will seal the surface. Acrylic polymer may also be used. Again, wait overnight to make sure the total surface is dry and ready to receive the ink. Some parts of the original surface of the cardboard may be left uncovered to create a light gray color. To insure a nonstick barrier, add thick foil prior to inking and printing with dampened paper. Apply colored ink evenly and sparingly over the whole surface. Feel free to try some blending.

Carefully place the absorbent paper over the surface of the collagraph. Apply gentle hand pressure followed by a firmer "heel of the hand" circular motion, or by pressure from a clean brayer.

When students have pulled a print, the plate needs to be removed before the next person uses the press. If the bed is large enough, several students can be accommodated at the same time.

Evaluation: Display the prints after they dry. Discuss the hidden clues that might suggest a locale. Ask what strengths emerge in each student's collagraph. What suggestions would they have for their compositions? How are collagraphs similar to other art forms? What are some limitations of collagraphs?

SAMPLE LESSON: ADVANCED

Objective: To translate a sketch into a collagraph print and observe the unusual effects that result from inking found materials.

Materials: See those listed for beginning students and on page 92 of the student text.

Procedure: Using hand-held mirrors, have students draw several self-portraits with simple contour lines. Have the students select their boldest drawings to simplify into shapes on a 15" x 20" (38 cm x 51 cm) cardboard surface.

Make a collagraph test plate using a range of textures from smooth to rough. Ask students if they see possible connections between the textures collected and the surface of the cardboard. Some of the students may respond that the textures could represent areas on the drawn portraits.

Direct students to begin cutting and loosely placing a variety of textures in strategic areas of their portrait compositions. When half the composition is filled, place a thin paper over the composition. Charge a brayer with minimal ink. Using moderate pressure, roll the brayer across the top surface of the paper to pick up the textures from below. This process is closely related to the frottage method, in which rubbing over textural surfaces results in marks coming through the paper. An alternate method would be to cover the whole surface with a simple sealer such as diluted white glue, gesso or polymer medium.

After a drying time of at least one period, the plate may be inked. Cellophane tape can provide white or light areas, such as eyes or highlights, while sand glued down will result in dark areas. Use softer rubber rollers to apply a layer of ink over the surface. Some areas can easily be wiped away to create lighter areas.

Due to the varied surface, more ink will be needed than for other types of prints. A combination of colors is to be encouraged once an acceptable proof is taken. Rolling with one color over the top of the surface before printing may enhance the overall quality. Usually, earth colors such as raw or burnt umber, burnt sienna, brown or black work better than more strident hues. A good rule of thumb is that a print working well in values will be a good candidate for color, while color rarely improves a composition in need of further development.

Upon inking, place dampened paper at least one inch larger than the dimensions of the plate on the surface and rub with your hand or a polished wooden tool such as a spoon or large knob. Paper with some degree of strength and thinness is best for this process.

When the plate, paper and felts are all run through the press as a pressured sandwich, the greatest potential problem will be in the amount of ink remaining on the plate. Because the pressure can be as great as one thousand pounds per square inch, any excess ink will have a tendency to spread in unwanted areas, and could damage the felts as the color bleeds into areas it shouldn't. To prevent this, check the plates before they are sent through the press or allow only hand pressure when collagraph plates are printed.

After prints are lifted, they should be stored in the drying rack, counter or clipped to a clothesline. Display the dry prints, let students exchange them with one another or transform them into foil reliefs by pressing a sheet of heavy, glued foil into the surface of each collagraph with a blunt pencil (glued side toward the cardboard plate).

Cut the foil somewhat larger than the plate, then bend the excess to the back side and tape it. Treating the surface with shoe polish, printers ink or other darkening agent can create the feeling of an aged relief. Steel wool or paper towels can help expose some of the metallic surface of the foil.

Variation: Cover the entire surface of the collagraph with an oil emulsion called "Easy Wipe Compound". Wipe the excess off the cardboard. Spread ink over the surface sparingly. Wipe these areas well before printing. A wadded

cloth and old toothbrush can work well both in rubbing into all the cracks and grooves and in clearing the surface from excess ink. Interesting light areas can be created around the edges of the raised surfaces where the inked paper cannot reach.

Evaluation: In what ways do individuals "show through" via textures or composition? How would a blind person respond to the surfaces? Name some of the strengths in working with this process. What suggestions would students have if they were to try it again?

ADDITIONAL NOTES

◆ White glue can be dripped on the composition to form a linear drawing.

◆ Cardboard scraps can be used to build up areas.

◆ The base can be incised in layers.

◆ A list of other useful items, perhaps stored in an oversized box, might include types of paper, leaves, tapes, contact paper, plastic, lace, textiles, sand and carborundum (used in lithography as a grinding agent). Objects to be avoided include thick cord, bottle-caps, buttons, coins, or any other objects that would rise too far above the surface of the collagraph or be sharp enough to cut the paper as it proceeds through the press.

◆ Paper punches or confetti can add a rhythmic quality, as can gummed reinforcements or textured pieces from wallpaper sample books.

◆ Three or more inch-wide soft rubber brayers with water-soluble printer's ink is best for the younger student. Older students can be instructed in the safe use of oil-base inks.

◆ Be sure table surfaces are well-covered before using any of the glue or materials, and have large waste barrels available.

◆ Print quickly with water-base inks, due to their glue-like consistency. If you wait too long, the paper could easily stick to the surface—especially if the ink dries. Use dampened paper to assist in transfer of inked image to paper surface.

7 Silkscreen

Student text pages 98-117

INTRODUCING THE MEDIUM

Silkscreen, or screen printing, provides a direct approach that is highly compatible with the spontaneity of the times in which we live. While it is often thought of as the youngest of printmaking techniques, it actually traces its origins to the beginning of time, when early humans applied their hands to cave walls and sprayed pigment across the hand to form a primitive stencil. This basic process was commercially developed by sign-makers during the first decade of the twentieth century.

The screen is made from a gauzy fabric, traditionally silk, stretched tautly over a metal or wood frame and hinged to a table or base where it can be lowered onto a sheet of paper. The fabric acts as a support for various stencil methods. The artist blocks out areas on the fabric where color is not required, but allows the passage of ink through the openings elsewhere. A variety of materials can be used on the screen as a blockout. These include oil pastels, lithographic tusche, crayons, pencils and photographic techniques—all described in the student text on pages 112 through 115.

Ink is poured in a thin band along the top of the screen, then wiped across the screen from one end to the other with a tool called a squeegee. As the frame is lifted from the paper, a film of ink is deposited on the paper through the open pores of the fiber.

Carl Zigrosser named the process serigraphy, deriving the term from sericum (Latin for silk). 1907 is the date of the patent in England employing current methods. Europeans developed many approaches using this process and the Japanese developed a form of serigraphy for fabrics. In the United States, artists of the 1930s borrowed the process from the commercial domain. During the 1960s, the technique expanded to include a combination of hand-cut stencils and photo processes.

Artists Mentioned in the Text (alphabetically)

Contemporary—Agusta Agustsson (98), Leo Byrnes (104, 105), Sondra Freckelton (105), Jane E. Goldman (106), Lisa Houck (106), Don Nice (102), Felice Regan (111), Frank Stella (97), Richard Treaster (107), Andy Warhol (101).

MOTIVATION

Part of the appeal of this print medium is the relative ease with which an image can be depicted. Pointing out reproductions of the work of artists Frank Stella, Andy Warhol, Sondra Freckelton or Jane E. Goldman in the student text can provide a range of strong images. Another attraction for students is the physicality of the process. Pulling a print involves the whole body.

Stenciling offers a fine introduction to serigraphy. Studying the work of Andy Warhol and Robert Rauschenberg, or Pennsylvania Dutch motifs can give students an idea of the vivid, multiple colors as well as subtle effects that can be integrated into compositions with stencils.

Where do we see the result of stencils around us? (Bottle labels, posters, bus advertising, greeting cards, wrapping paper, wallpaper, photo murals, work of Pop artists.) Why would a person be interested in stencils in a creative way? Aren't stencils used mostly for mechanical type letters?

Mechanical lettering is only one limited form of stenciling. Creative use of stencils involves experimentation with repeated units of design applied in an

atmosphere of control and challenge. Much skill is needed in planning the details before production. Care is especially needed in cutting the exact configurations desired. Shapes may be either cut or torn, depending on the quality of the edge needed. Almost any surface color can be stenciled.

Skills in cutting and applying pigment can lead to many uses throughout a lifetime. One current trend is to use stencils in the decor of a home or for refurbishing furniture.

SAMPLE STENCILING LESSON: BEGINNING OR ADVANCED

Materials:

◆ cutting tools

◆ waterproof or special stenciling paper (a budget-saver could be discarded oak tag file folders)

◆ sponges

◆ spray hog bristle brushes, discarded toothbrushes or inexpensive stencil brushes

◆ tempera, watercolor or other water-base pigment (if stenciling on textiles, such as evenly woven cotton cloth, use oil-base pigments or special fabric paints)

◆ straight pins

Procedure: Use a 3" (7.6 cm) square of stencil paper to cut a simple nonobjective shape. Place this stencil over a surface; almost any surface can be stenciled. If it is a paper format, pin the paper to a drawing board. If it is cloth, stretch the cloth tightly over newsprint or blotting paper. The stencil can be the mask, or the negative shapes cut from the mask. Apply the pigment thickly enough not to run, yet thinly enough to avoid heavy build-up. Experimenting with the interaction of the brush and the surface will help you judge how to

apply pigment. A dabbing motion can suggest shading.

Narrow ties or bands of paper must be used to hold parts of more complex designs together. Great care is also needed to avoid damage to the stencil.

Stencils may be moved slightly to reprint and create a shadow effect, but the bottom of the stencil must be clean, with no pigment under the surface. For another variation, try using two or more stencils on the same surface.

Clean equipment must be used; stress cleanup as part of the process. Teams might be selected to clean brushes (store with bristles up), palettes and stencils, and to put away the work carefully in a dry location.

SAMPLE LESSON: BEGINNING

Objectives: To accurately produce a silkscreen print using two or more colors with proper registration and to become acquainted with the use of overlapping, transparent forms through stencils.

Materials:

- silkscreen frame (See student text page 102 for construction details.)
- freezer wrap
- transparent base (ink)
- two complementary hues (any opposite colors on the color wheel)
- gloves

Procedure: Demonstrate the procedure to acquaint all students with it. Ask where they have seen transparent qualities as well as overlapping. Have each student try the squeegee pressed over the silk to get a feel for the right tension. Variables that will need practice include:

- "feel" of the stroke; getting the correct tension
- application of the correct amount of ink on the screen
- consistency of "pulls" in a series of impressions

Have students cut a variety of shapes from freezer wrap. These could be biomorphic (free form) numbers or letters—perhaps the initials of the student. From

these, select a few shapes that range from small to large. Place the shiny side of the shapes against the screen. Make the stencils large enough to overlap the sides of the screen by 1/16th of an inch. Show examples that illustrate how numbers and letters can form a design when they run off the paper, and how they can seem like more abstract shapes when taken out of context.

Put on protective gloves and start with the lightest ink, applying it to the top edge and stroking as evenly as possible to the bottom. Try an edition of ten prints. Remove the stencils and clean the screen between each of the runs. Proceed with the second, darker of the complementary colors. After the second run, have students discuss how two colors can actually create three, due to the transparency of the ink.

Alert students that frequently a problem occurs when the screen becomes dry and fills in. You might fill in a screen as an example of what not to do. Also, working too large at first will reduce the control during the silkscreen experience as will using free-floating shapes. Having shapes touch an edge is important. Consider it to be a good result if six out of the ten prints have satisfactory pulls.

Evaluation: How carefully were instructions followed? How did students cope with unexpected situations? Is there a new appreciation for shapes, transparency and overlapping?

SAMPLE LESSON: ADVANCED

Objectives:

◆ To understand the use of photographic film stencils, with solid adhesion to the screen.

◆ To demonstrate the elements of art and principles of design in producing a screen print with positive and negative spaces.

◆ To learn the history of the silkscreen process, referring to important contributions of the artists of this century.

◆ To build form by layering degrees of ink density.

Materials:

- paper
- ink
- silkscreen frame (See student text page 102 for details on construction.)
- contact paper
- scissors or cutting knife
- squeegee
- gloves

Procedure: Direct students to cut free-form shapes from construction paper, then have them each select three to five shapes to trace onto contact paper using a ballpoint pen. Apply ink after the stencils are attached to the screen. (The sticky side is attached to the screen, shiny side remains up.) After a pull of ten prints, remove the stencils, clean the screen and reapply stencils in new areas. Repeat this procedure to allow for four to five overlaps, with the transparent medium being used with one selected color. With each new pull, add more pigment and less transparent base. This shifting of shapes combined with transparency gives a sense of space and form to the work.

Evaluation: How satisfactory does the composition appear to the student who created it? What could be done to help the composition be more effective? What needs to be simplified? Amplified? Discuss how serigraphy could provide a base for more independent ideas and imagery. Have students gained an appreciation for the flatness of many graphic designs? How could it be useful in creating an atmospheric landscape?

9 Paper & Papermaking

Student text, pages 122-134

FROM PULP TO PAPER

Three basic approaches to papermaking have been developed through the centuries. All three manufacturing processes and types of paper exist today, each with unique characteristics:

Oriental. This type of paper is made from raw plant materials. It is thin and pliable and it has excellent strength yet thinness for hand-rubbed prints. Common types are:

◆ kozo—domesticated plant, strong, light tan color; some types contain long fibers or added leaves, flowers or plant parts.

◆ mitsumata—fine-textured paper, warm reddish tone. Less common than kozo.

◆ gampi—smooth surface, lustrous, appears to "glow" from within. Fairly easy to obtain, but also more expensive due to its highly refined qualities.

Each of the oriental papers is available in a variety of thicknesses, and mixed relative to handmade and machine made.

European. Linen or cotton fibers are traditionally used in making these papers. This is how rag paper received its name. Qualities of each include:

◆ linen—crisp and firm feel.

◆ cotton—absorbent, soft.

Rag papers provide a durable medium for the stresses of printing processes such as etching or collagraphs. The highest quality papers are made by hand, but many fine machine-made papers are available as well.

Machine-Made. These papers are generally derived from trees. Strong chemicals are used to separate wood fibers. The fibers are then usually beaten with a Hollander Beater into a pulp and onto a screen. This process results in:

- acidic and structurally weaker papers.
- strong directional grain.
- readily available, modestly priced product.

An example of machine-made paper is newsprint which turns yellow easily. Cotton fiber can be added for strength.

Mold-made papers, made of cotton or cotton blend, are also produced by machine, but have greater strength. Other types of machine-made materials include such non-woven textiles as Pelon fabric. Characteristics are:

- range of weights.
- smooth surface.
- slight sheen.
- good for subtle layering.

Another type of paper is handmade paper, generally made by artists. Characteristics include:

- range from smooth to rough.
- can be shaped, colored, stitched, cut, layered.

One reason for the sudden rise in popularity of papermaking in schools today is the fact that paper can be created with little or no exposure to dangerous chemicals and fumes. Papermakers do need to exercise caution when working with machinery in the vicinity of water, in the mixing of the pulp, and in the choice of pigments.

Demonstrate the process for students before having them attempt it. Show them many examples of paper. Checking out books on papermaking will assist in overall expertise in current trends and possibilities.

Innovative approaches include casting paper, or placing pulp over a solid form. (See student text pages 132-133.) Forms can be used to "slump" the pulp, as in the text examples, or objects can be pressed into the pulp. Open

forms can be useful in creating islands with a variety of colors within a single matrix.

Teamwork is important in papermaking. Like clay activities, intensive time is needed to set up the activity, to have everyone involved participate in a democratic manner, and for cleanup. Half the challenge of papermaking is in proper cleanup procedures.

If you have had little experience in papermaking, make a strong attempt to attend a short workshop, to look for quality blenders at auctions or second-hand shops, and to collect quality scrap paper or cloth to be used in creating pulp. When you try a papermaking activity with a class, remember that you must supervise the blenders. The tendency is to overload the blender with pulp and leave the motor running, causing a motor overload. Wiring must also be checked for possible malfunctions.

COMMERCIALLY AVAILABLE PAPER

The following is a list of commercially available paper, with a description and common usages of each. This information was provided compliments of Dolphin Papers, 1125 Brookside Avenue G-900, Indianapolis, Indiana 46202.

Alcantara 100% rag, handmade in Sicily. Acid free. Etching, litho, drawing. Seven light-fast colors.

A/N/W Drawing 100% rag, acid free. For drawing, painting. Barrier paper for conservation framing.

Aquaprint Silk Screen 100% rag, acid free. Especially recommended for water-based silk screen printing. Excellent drawing paper. Suitable for stone & offset lithography.

Arches Cover 100% rag. Mouldmade in France, acid free and buffered, unsized. Litho, silk screen, etching, letterpress printing.

Arches MBM Ingres 75% cotton, acid free. Printing, drawing, calligraphy.

Arches en Tout Cas 25% rag, acid free. Available in sheets and rolls. One side cold pressed, reverse is hot pressed.

Arches Text 100% rag, acid free and buffered for printing and drawing. White is smooth finish, cream is laid finish.

D'Arches Watercolor 100% cotton, acid free, four deckled edges. Heavy sizing permits erasing and over-painting without fuzzing. Suitable for mixed media, drawing, pastel, silk screen. Available in rolls.

Archival Poster 100% high alpha pulp, acid free and buffered, surface sized. For offset printing, drawings, silk screen, calligraphy.

Australian Marbled Papers Eleven patterns of original designs printed on 50% rag paper are available.

Bark Paper Handmade in Mexico by Otoni Indians. This unique paper is stocked in fifteen colors.

Basic Archival Drawing Made in U.S. from 100% high alpha pulp, this paper is acid free and buffered, has a medium finish and is an excellent student drawing paper. Surface sized for clean erasing.

Blotting (Cosmos Blotting) Acid free blotting paper for interleaving, blotting, drying, etc. Heavy and very absorbent.

Canson Mi-Tientes This popular French pastel and calligraphy paper is stocked in seventeen colors.

Canson Ingres The colors of this text weight paper match most of the Mi-Teintes colors but the surface is smoother.

Copperplate Acid free etching paper mouldmade from 25% cotton and 75% high alpha pulp and is unsized. Not suitable for silk screen printing.

Curtis Flannel Acid free, 50% cotton, 50% high alpha pulp. This is a beautiful paper for fine book printing. Large selection of colors in a light weight, text weight and cover weight. Printing and bookbinding sample book available.

Dolphin Litho Transfer Paper A superb litho transfer paper available in sheets and rolls. Instructions for use are included with initial order.

Domestic Etching A 50% rag, acid free paper that is similar in appearance and surface to Rives Heavyweight. For etching, litho, drawing and letterpress printing.

Double Crown Proofing An acid free and buffered paper made in U.S. from high alpha pulp. Excellent proofing paper for all printing processes and for student printmaking.

Echizen Washi Nine patterns of Japanese decorated papers available.

Fabrioano Ingres Made in Italy, this paper is available in a text weight and a matching cover weight. We stock a twelve-color assortment of both weights.

Frankfurt Mouldmade in Germany from rag and high alpha fiber. For book printing, drawing, calligraphy.

Gampi Torinoko Handmade in Japan from 100% Gampi fiber. Acid free and very strong. Suitable for intaglio, litho, woodcuts.

Gasenshi Echizen Handmade in Japan. Acid free and light weight but strong with delicate laid lines. For printing, woodcuts, rubbings.

German Etching 75% cotton, mouldmade in Germany. Lightly sized, acid free.

Glassine Acid free 1 mil smooth finish, transparent paper for archival uses such as slip-sheeting, interleaving, packaging of fine art objects. Available in sheets and rolls.

Goldtone Parchment An imitation parchment made in U.S. from high alpha fiber with an antique gold appearance. Surface sized. Suitable for offset printing, calligraphy.

Goyu Handmade in Japan. Conservation, letterpress printing, woodcuts.

Gutenberg Laid Mouldmade in Germany. Color is light tan with very small brown flecks. For letterpress printing, drawing, calligraphy.

Hosho Handmade in Japan. A soft, strong, unsized, acid free paper. For letterpress printing, woodcuts, block printing.

Hosho Student Grade Handmade in Japan. A heavier and somewhat coarser version of Hosho.

Hosokawa Oban Handmade in Japan of 100% Kozo. Conservation, woodcuts.

Ichimatsu A light weight Japanese paper with two patterns. One is white on white checkerboard. The other is black and white checkerboard. The weight is similar to that of lace papers.

Indian Handmade Papers These handmade rag papers from India must be seen to be appreciated. Available in light weight and cover weight, they are made in many combinations such as Rag and Algae, Rag and Wheat, Rag and Rice Straw, etc.

Ingres Antique Mouldmade in Germany. Watermarked, four deckle edges, nine colors. An excellent charcoal and pastel paper. Also for fly leaves, printing, end sheets.

Interleaving A light weight acid free paper for interleaving, slip sheeting, etc. Also used for packing of art objects for shipment. Available in sheets and rolls.

Irodori Another name for Echizen Washi M-19.

Iyo Glazed Handmade in Japan. Letterpress printing, drawing, etching. It has the appearance of a genuine parchment.

Italia Mouldmade in Italy by Fabriano. 100% cotton, acid free, two deckle edges. Stocked in white and colors.

Johannot Mouldmade in France. 100% cotton with a slightly textured finish. Made by the makers of Arches Cover and Rives BFK, it is used in the same way as those papers. Also an excellent drawing paper.

Kaji Handmade in Japan of 100% Kozo fiber. For conservation, woodcuts.

Kinwashi Made in Japan from manila hemp. It is glazed on one side and sprinkled with small vegetable fibers on the other. For collage, can be printed on the glazed side.

Kitakata Handmade in Japan. The light tan color and silky surface make

Kitakata one of the most popular papers for woodcuts and the conservation of old books and documents.

Kochi Handmade in Japan, Kochi is a soft and rather heavy (109 Gm) unsized paper recommended for letterpress printing and woodcuts.

Lace Paper Handmade in Japan of Kozo and wood pulp. A featherweight paper that resembles real lace, it is available in a number of patterns.

Lanaquarelle 100% cotton handmade watercolor paper made in France by the Lana Mill. Excellent for all watercolor techniques.

Lana Cover 100% rag, mouldmade in France, acid free and buffered. Similar to Arches Cover.

Lana Royal 100% cotton, acid free, mouldmade in France. Lana Royal has a smooth surface and is similar to Rives BFK.

Larroque Handmade Beautiful paper.

L Tissue (Lens Tissue) 100% Manila hemp. Acid free, very light and strong. For conservation, rubbings, etc.

Lenox 100 100% rag, acid free, made in U.S. For all printmaking techniques, drawing.

Masa Made in Japan. This is a reasonably priced, light weight paper for woodcuts, letterpress printing.

Mohawk Letterpress Made in U.S. of high alpha fiber. Especially for letterpress printing.

Moriki (Yatsuo) Handmade in Japan. A soft, light weight, elegant oriental paper. Stocked in Indianapolis in white, black and twenty colors.

Mulbery Handmade in Japan of Kozo and high alpha fiber, this paper has high wet strength and is acid free. For conservation, woodcut, etc.

Murillo Mouldmade in Italy by Fabriano, 25% rag. Murillo is a heavy, rather rigid paper with a textured surface. Suitable for etching, drawing.

Nideggen Mouldmade in Germany from rag and alpha fiber. It has an unusual laid finish with wavy laid and chain lines. The color is beige. For letterpress printing, calligraphy, drawing.

Okawara The two smaller sizes are handmade of 100% Kozo. The 36" x 72" size is machine made from Kozo and wood fibers. For woodcuts, etching, fine book printing.

Permalife Made in U.S. from high alpha fiber, it is a text weight, acid free book paper with some conservation applications.

Portfolio marbles Reproductions of traditional hand marbled papers printed on premium grade coated paper. Available in four patterns.

Richard de Bas Inclusiones Florales Perhaps the most beautiful paper in stock, it is a work of art in its own right. Tiny delicate flowers and leaves are imbedded in the paper before it is dried. Available with white, pink or tan background. Use your imagination about applications, or just hang it on the wall and enjoy.

Rives BFK 100% rag, mouldmade in France. It is lightly sized (rolls are unsized) and is available in white, cream, tan and gray. Suitable for all printmaking techniques.

Rives de Lin Mouldmade in France of 85% cotton and 15% linen fibers, this is a superb etching paper, soft but extra strong because of the linen fiber. Highly recommended for embossing.

Rives Lightweight 100% rag, mouldmade for all printmaking techniques, book printing, drawing.

Rives Heavyweight Has the same specifications as Rives Lightweight but is twice as heavy.

Rives Extra Rough This is Rives BFK with a gram weight of 270, made with an extra rough surface.

Roma 100% rag, handmade in Italy by Fabriano in white and seven colors.

Rosaspina Mouldmade in Italy by Fabriano. 40% cotton, acid free. For etching, drawing.

Sekishu Handmade in Japan of 70% Kozo, 25% alpha fiber. For conservation, woodcuts, chine colle'.

Sekishu Torinoko Gampi Handmade in Japan of 100% Gampi fiber. For conservation and repair of art objects on paper.

Sekishu Kozogami Mare Handmade in Japan of 100% Kozo. It is hand beaten, which creates a superior formation.

Sekishu Kozogami Tsuru A very soft paper with great strength, handmade in Japan of 100% Kozo. Its lack of bulk and superior strength make it practical for many types of repair work.

Silk Tissue Machine made in Japan from Gampi fiber. Very light and transparent with a silky feel. Acid free. Conservation overlays, etc.

Somerset Satin 100% mouldmade in England with a smooth surface. All printmaking techniques, drawing.

Somerset Textured Same as Somerset Satin but with slightly textured surface. Available in white, soft white and cream.

Stonehenge 100% rag, made in U.S. For etching, silk screen, pastel and charcoal drawing, calligraphy.

Superfine (Mohawk) Machine made in U.S. A soft white, acid free, eggshell finish printing paper. Sized for offset printing. Available in white, soft white and ivory.

Tableau 100% hemp, made in U.S. Has very high wet strength. Conservation, block printing.

Tosa Tengujo Handmade in Japan from 100% Kozo fiber. Very light, strong and transparent. Conservation.

Uda Thin Handmade in Japan from 100% Kozo fiber. Acid free. Conservation.

Unryu Inaba Handmade from 100% Kozo fiber. A deluxe Unryu with more fibers and more even fiber distribution.

Unryu with Gold and Silver A light weight Unryu with small gold and silver flecks distributed throughout the surface.

Unryu -T Colored Unryu with silky fibers distributed throughout the sheet. Available in ten colors.

Vegetable Parchment A white imitation parchment with a mottled surface. For offset printing, calligraphy.

Waterfold Watercolor 100% cotton, mouldmade in England by Inveresk. Similar to D'Arches Watercolor but with a somewhat softer surface.

Weston Diploma Parchment 100% cotton, made in U.S. A heavy, soft white parchment paper with an excellent printing and writing surface.

Part Three: Additional Information

INNOVATIVE PRINTMAKING APPROACHES

The following printmaking processes, not covered in the text, tend to be simple to organize and require less of an investment in equipment. You could try some of these as warmup exercises or extra projects for students who want to expand into new areas.

RUBBINGS

Select coins, gratings, sidewalk cracks, tire treads, engraved stone or metal or pulpy/fibrous materials from nature (leaves, sticks, random objects, scrap wood). Using the side of a crayon and a thin sheet of paper (typing paper, dye paper, newsprint), try transferring unusual surfaces and skins normally unnoticed. Place the lightweight paper over the object(s). Tape sides down lightly. Rub sensitively over the surface to reveal the texture below. For an alternate activity, roll over the area with a brayer and a very small amount of printer's ink.

FLEXIBLE MATRICES

This can be a very basic introduction to relief processes. Material used is soft, pliable and inexpensive. Obtain foam meat trays from the local supermarket (recycled ones are not recommended because of possible food contamination).

Use a pencil or ballpoint pen to break through the surface prior to inking. Objects can also be used to press indentations into the soft surface. Making simple prints with materials such as a meat tray or even art gum erasers, can provide an opportunity to learn about design, composition and printing methods. Another recent "find" is the user-friendly backside of vinyl flooring. This can be worked with simple linoleum cutters (see page 43 of the student text), and may be available for the asking from local dealers with outdated samples.

Display the matrices together in close formation prior to inking and printing. Let students develop a sense of mission in the classroom by deciding how to use the prints. Calendars and greeting cards could be created, for examples. Advanced students using the block method could combine single units to form a larger configuration, similar to Islamic tile designs. This is an excellent correlation possibility with Social Studies, Science, or mathematic tessellations.

BIOPRINTS

Sense of adventure, yet familiarity and simplicity have helped make this print form popular for many years in the schools. This method includes using organic material (frozen or very fresh fish, crisp cabbage, carrots, celery, potato (see student text pp. 96-97), sponge, clay, found objects or wood scraps soaked to bring out the grain. The inherent moisture in organic products attracts and holds water-base ink well, and retards drying for a longer period.

Students are inherently motivated to use organic materials. Emphasize to them the need for flat printing surfaces, achieved by cutting carefully into the end of the organic objects, dipping into a modest amount of watercolor, tempera or colored ink, and gently applying the objects to thin, absorbent paper. More rhythmic patterns can be added gradually. Overlapping with a variety of colors can create rich visual surprises.

FROTTAGRAPHS

How can found objects be turned into a print? What would be a solid introductory experience to a unit on printmaking? A work of frottage can answer both questions.

Use any of the following materials: screening, any textural materials, corrugated cardboard, cloth scraps, netting. Roll with a slightly dry ink over the surface of selected thin paper. (If your budget is tight, use newsprint.) Move the paper slightly and roll again, perhaps with more or less ink and pressure. A sense of spatial depth can be built in this manner, including an illusion of shadows. Study the work of Max Ernst when completed.

FOIL STAMPING

The range of metallic foils is constantly expanding. New palettes include gloss, matte, blind embossed, and pearlized surfaces. When combined with traditional art forms, unlimited possibilities open. Once limited to commercially-based stationary, book covers, greeting cards and graphic designs, the hot stamping of roll leaf from inception to the completed print can be safely controlled and executed by an individual artist, teacher or student.

The costly, massive and complex machinery used by industry and commerce has been scaled down to a human, hand-held unit within the reach of people in studio and classroom situations. Roll leaf processes may now stand alone, or be integrated with embossments, collagraphs, intaglio, lithography, relief or serigraphy prints, or other graphic processes such as lettering. For further information on the Iowa Foil Stamper, contact Virginia A. Myers, Professor of Art, University of Iowa, 100 Art Building, Iowa City, Iowa 52242-1706. Telephone: 319-335-1766 or 319-335-7771.

ART MATERIALS SUPPLIERS

Advance Process Supply Company
400 Noble Street
Chicago, IL 60622-6383
312-829-1400
Screenprinting specialists

Aiko's Art Materials
3347 N. Clark Street
Chicago, IL 60657
312-404-5600
Woodblock and paper specialists

Andrews/Nelson/Whitehead
31-10-48 Avenue
Long Island City, NY 11101
718-937-7100
Paper specialists

Dick Blick
P.O. Box 1267
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309-343-6181
Provides comprehensive catalog with all general school materials as well as all printmaking materials

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Chaselle, Inc.
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Columbia, MD 21046
301-381-9611
General art supplies

Dolphin Papers
624 E. Walnut Street
Indianapolis, IN 46204
313-832-6004
Excellent variety—see teacher's guide for full listing of papers

Graphic Chemical and Ink Company
728 N. Yale Avenue
P.O. Box 27
Villa Park, IL 60181
312-832-6004

Full catalog of printmakers supplies and resources. Excellent track record for years of helping print programs get off the ground at all levels

Hunt Manufacturing Company
230 S. Broad Street
Philadelphia, PA 19102-4167
215-732-7700

Jerry's Artorama
117 S. Second Street
New Hyde Park, NY 11040

General art and printmaking materials and tools

McClain's
P.O. Box 13734
Portland, OR 97213-0734
503-294-0642
800-832-4264

Elaine Chandler has dedicated her business to helping with information, catalogs, etc. for those interested in relief methods—especially oriental tradition in woodcuts

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Complete service to screenprinters for many decades. Locations on East and West coasts

Pearl Paint Company, Inc.
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A favorite location for the visual artist in the New York area and beyond—two other locations in New York City area

Rembrandt Graphic Arts Company
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800-622-1887

Long established suppliers to printmakers. Line of presses for schools

Rising Paper Company
Park Street
Housatonic, MA 01236

Reliable company with stock of papers helpful for all printmakers

Daniel Smith, Inc.
6500 32 Avenue NW
Seattle, WA 98117
206-783-8263

World class catalog, inventory and service. Also has wide array of matting and framing supplies

Texas Screen Print Supply
304 N. Walton
Dallas, TX 75226
800-366-1776

Twinrocker Handmade Paper
RFD 2
Brookstone, IN 47923
317-563-3210

Ulano Corporation
255 Butler Street
Brooklyn, NY 11217
718-622-5200

Also located in Midwest at 832 E. Rand Road, Unit 17, Mt. Prospect, IL 60056, 312-392-1446, and in Sherman Oaks, CA

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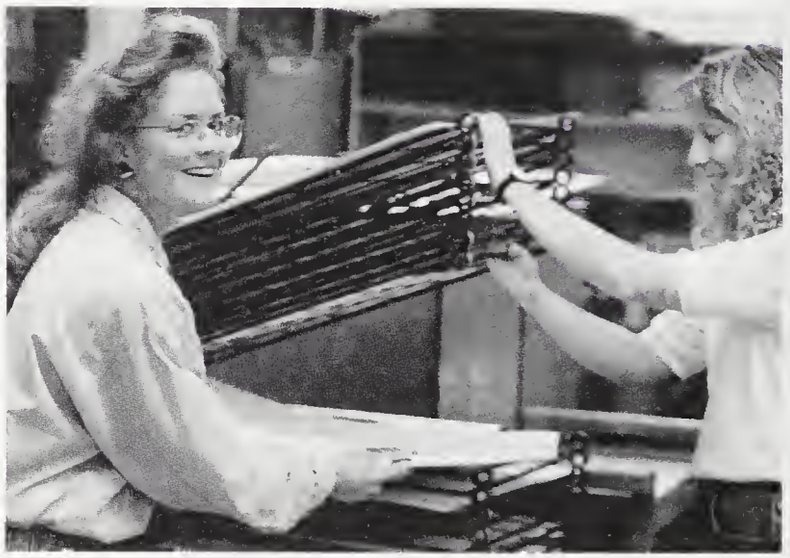

Basic Printmaking Techniques
Correlations to Essential Elements and TAAS

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